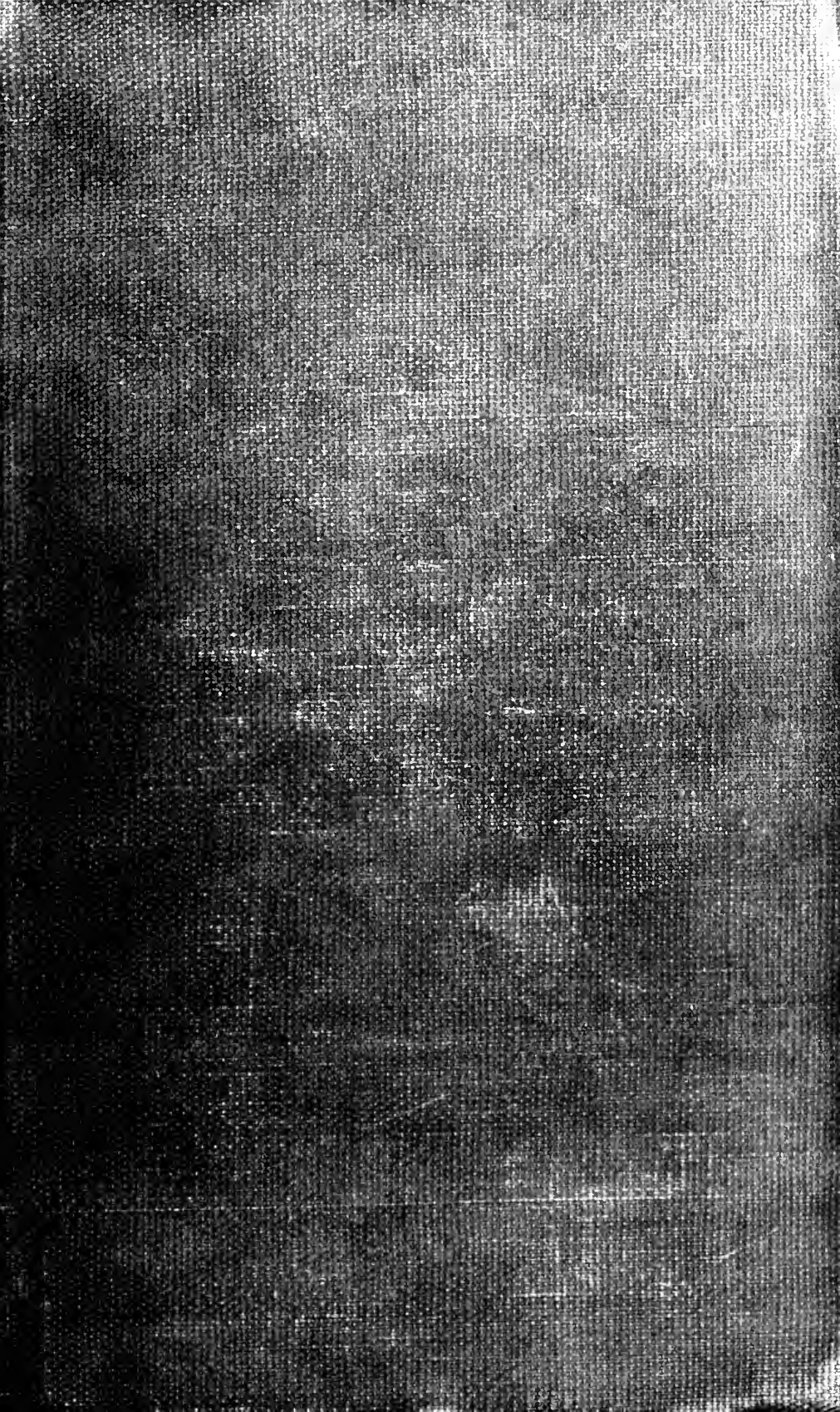

FLUORIDATION OF WATER

HEARINGS

BEFORE THE

COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE HOUSE OF REPRESENTATIVES

EIGHTY-THIRD CONGRESS

SECOND SESSION

ON

H. R. 2341

A BILL TO PROTECT THE PUBLIC HEALTH FROM THE DANGERS OF FLUORINATION OF WATER

MAY 25, 26, AND 27, 1954

Printed for the use of the Committee on Interstate and Foreign Commerce

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UNITED STATES
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FLUORIDATION OF WATER

TUESDAY, MAY 25, 1954

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D. C.

The committee met, pursuant to notice, at 10 a. m., in the committee room, 1334 New House Office Building, the Honorable Charles A. Wolverton (chairman) presiding.

(H. R. 2341 and the reports thereon are as follows:)

[H. R. 2341, 83d Cong., 1st sess.]

A BILL To protect the public health from the dangers of fluorination of water

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That no agency of the Government of the United States (including the government of the District of Columbia, and of each Territory and possession of the United States), and no agency of any State, or of any municipality or other political subdivision of a State, shall treat any public water supply with any fluoride compound, or make any water so treated available for general use in any hospital, post office, military installation, or other installation or institution owned or operated by or on behalf of any such agency.

GOVERNMENT OF THE DISTRICT OF COLUMBIA,
EXECUTIVE OFFICES,
Washington 4, D. C., April 29, 1954.

Hon. CHARLES A. WOLVERTON,
Chairman, Committee on Interstate and Foreign Commerce,
United States House of Representatives,
Washington, D. C.

MY DEAR MR. WOLVERTON: The Commissioners have for report H. R. 2341, 83d Congress, a bill to protect the public health from the dangers of fluorination of water.

The bill would prohibit the United States Government, the Government of the District of Columbia, every State, and every municipality or other political subdivision of a State, from treating any public-water supply with any fluoride compound, or from making any water so treated available for general use in any hospital, post office, military installation, or other installation or institution owned or operated by the United States Government, the government of the District of Columbia, and State, and any municipality or other political subdivision of a State.

This report is directed to the harm which, in the light of scientific opinion, would result to the residents of the District of Columbia if the use of sodium fluoride in the water supply of the District were prohibited. It should particularly be noted that while H. R. 2341 purports to be a bill to protect the public health from the dangers of fluorination of water, such dangers appear to be imaginary. The real danger lies in the elimination of flouride from the District's water supply, since it has been estimated by the Director of Public Health of the District that should such action be taken, after a period of 10 years there would be 65 percent more caries in the teeth of the children of the District, and that by the time such children were 40 years of age, 95 percent of them would have lost the majority of their teeth. The loss to the public would be

twofold: the cost of increased dental work, and a deterioration of the public health arising from the increase in defective and missing teeth.

The May 1953 Journal of the American Dental Association discusses the fluoridation of water in an editorial reading as follows:

"Evidence favoring fluoridation continues to mount.

"Resolutions passed last month by two of dentistry's leading scientific agencies, decisions made by 2 of the country's larger cities and reports presented by 2 different groups of researchers strengthen the already sound position of proponents of water fluoridation. The Council on Dental Research, April 10, after a reevaluation of evidence, reaffirmed its support of fluoridation as a dental health measure and commended departments of public health for their scientific contributions to the problem of caries control through fluoridation. The Council on Dental Health on April 14 restated its support of fluoridation as a safe anticariogenic measure, pointing out that the volume of accumulated scientific data has established beyond any reasonable doubt both its safety and efficiency. Milwaukee citizens on April 7 by referendum overwhelmingly approved fluoridation, and Cincinnati by an 8 to 1 vote of its city council on April 1 decided similarly. Three researchers from the University of Rochester reported on April 7 that 'if all fluoride in drinking water containing one part per million fluorine were to be deposited in the skeleton, the situation would be perfectly safe.' And lastly, a Yale University School of Medicine scientist again scotched the rumor that fluoridation of water increases the incidence of cancer by reporting to the International Association for Dental Research, March 20, that tumors transplanted into mice developed more slowly if the mice received fluoride. Thus the scientific evidence mounts monthly in favor of fluoridation, leaving to opponents of the process only vapid arguments based either on emotionalism or misinformation."

The Commissioners have been informed that the American Medical Association, the American Dental Association, the American Public Health Association, the State and Territorial Health Officers Association, the United States Public Health Service, the National Research Council, and other leading professional and scientific organizations have fully endorsed controlled water fluoridation as an outstanding public health measure.

The Commissioners are therefore of the view that the controlled fluoridation of the water supply of the District of Columbia is of benefit to the citizens of the District, and they strongly recommend that the bill not be enacted.

The Commissioners have been advised by the Bureau of the Budget that there is no objection on the part of that office to submission of this report to the Congress.

Very sincerely yours,

SAMUEL SPENCER,
President, Board of Commissioners, D. C.

UNITED STATES DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington 25, D. C., September 18, 1953.

Hon. CHARLES A. WOLVERTON,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington 25, D. C.

MY DEAR MR. WOLVERTON: This is in response to your request for a report from this Department on H. R. 2341, a bill to protect the public health from the dangers of fluorination of water.

I recommend that the bill be not enacted.

H. R. 2341 would prohibit the treatment of any public water supply with any fluoride compound by any agency of the United States, including the District of Columbia and the Territories and possessions of the United States, or by any agency of any State, including any municipality or other political subdivision thereof. It would prohibit these agencies also from making available any water treated with fluorides for general use in any hospital, post office, military installation, or other installations or institutions owned or operated by or on behalf of any such agency.

In connection with the operation of a program for prevention and treatment of dental disease among American Indians, this Department has had occasion to give considerable study to the effect of fluorine in drinking water. It is the

opinion of our specialists in this field that the addition of 1.0–1.5 parts per million of fluorine to water supplies produces a beneficial effect upon the oral health of individuals consuming such reconstituted waters. Furthermore, we have been unable to find any scientific evidence which shows that the ingestion of water containing 1.0–1.5 parts per million of available fluorine ions has any deleterious toxicological effect upon the human body. We are much opposed to any action which would deprive the American Indian of the health benefits to be derived from the carefully controlled usage of fluorides in their drinking water.

Several of the Territories under the jurisdiction of this Department are considering fluorinating their water supplies, and some have begun the process. The Alaska Board of Health has recognized the benefits of fluorinating drinking water, and has established procedures which must be followed by Alaskan communities which choose to utilize this process. At the present time, there are three communities considering fluorination in Alaska, and completed plans have been received by the board of health for the installation of fluorination equipment at Anchorage, which is the largest city in Alaska.

By House Concurrent Resolution No. 64 of the 26th Legislature of the Territory of Hawaii, the matter of fluorination of the water supply of Honolulu and Hilo was placed before the board of health of the Territory, the board of water supply in the city and County of Honolulu, and the board of water supply of the County of Hawaii, for their study and report back to the legislature. Comprehensive compilations of source materials, findings, and conclusions have been prepared by these boards, and have been submitted to the Legislature of Hawaii for consideration.

In the Virgin Islands, fluorination of water supplies is in the planning stage. At present no fluoride compounds are added to the public or semipublic water supplies in that territory. American Samoa has done nothing about the fluorination of its water supplies, but plans to give the matter consideration because of the high percentage of tooth decay among Samoan children.

The Commonwealth of Puerto Rico has taken steps toward the fluorination of its water supply, based on the evidence contained in various scientific literature, and especially on the resolution approved by the Association of State and Territorial Health Officers at its annual meeting held in December 1952. By Act No. 376 of 1952, the Puerto Rican Legislature appropriated to the aqueduct and sewer authority the sum of $96,000 for the purchase of equipment and materials necessary for the fluorination of the water serviced by the metropolitan aqueduct system. An appropriation in the sum of $165,000 is being requested from the legislature this year for the purchase of equipment and supplies for the fluorination of water in other public water systems. The 6-year economic plan for 1953–54 to 1958–59 calls for appropriations in the sums of $145,000, $169,000, $195,000, $222,000, and $183,000 in successive years for the purchase of equipment and materials for broadening the fluorination program. It is expected that by the year 1958–59, all major public water systems in Puerto Rico will be supplying fluorinated water to consumers.

In the administration of the Territories of the United States, a steady policy has been followed of placing the responsibilities of local self-government in the control of the territorial peoples as their political, economic, and social development has warranted. The beneficial result of this policy has been recognized generally. Enactment of H. R. 2341 would be a reversal of this beneficial policy as far as local public health is concerned. All of the Territories have the human resources with the accumulated wisdom, intelligence, and judgment sufficient to enable them to determine matters of local public health. We believe this opinion is substantiated by the manner in which the several Territories are now studying the matter of fluorinating their water supply.

It would appear also that to the extent H. R. 2341 purports to control State action concerning local health matters it would be subject to constitutional objections. Such objections are not, of course, within the purview of this Department.

Therefore, I recommend that H. R. 2341 be not enacted.

The Bureau of the Budget has advised that there is no objection to the submission of this report to your committee.

Sincerely yours,

ORME LEWIS,
Acting Secretary of the Interior.

DEPARTMENT OF THE ARMY,
Washington, D. C., May 13, 1953.

Hon. CHARLES A. WOLVERTON,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives.

Dear Mr. CHAIRMAN: Reference is made to your request to the Secretary of Defense for the views of the Department of Defense with respect to H. R. 2341, 83d Congress, a bill to protect the public health from the dangers of fluorination of water. The Secretary of Defense has delegated to the Department of the Army the responsibility for expressing the views of the Department of Defense thereon.

The Department of the Army, on behalf of the Department of Defense, is opposed to the enactment of H. R. 2341 for the reasons set forth below.

The bill, H. R. 2341, would prohibit all agencies of the Government of the United States, and all agencies of any State or municipality or other political subdivision of a State, from treating any public water supply with any fluoride compound. Further, it would prohibit the use of such treated water by any hospital, post office, military installation, or other installation or institution owned or operated by or on behalf of any of the aforesaid agencies.

The principle of fluorination of certain potable water supplies as a means of preventing dental caries in children has been accepted by the house of delegates of the American Dental Association (October 1950), by the governing council of the American Public Health Association (November 1950), by the Surgeon General, Department of the Army (November 1950), by the American Medical Association (December 1951), by the United States Public Health Service, and by other Federal and State agencies interested in public health.

In April 1951, the National Research Council convened an Ad Hoc Committee on Fluorination of Water Supplies to review the evidence on this subject and to prepare an impartial report. Special attention is invited to the conclusions of the report which state in part: "In view of these considerations, the committee recommends that any community which includes a child population of sufficient size, and which obtains its water supply from sources which are free from or are extremely low in fluorides, should consider the practicability and economic feasibility of adjusting the concentration to optimal levels. This adjustment should be in accord with climatic factors and a constant chemical control should be maintained. With proper safeguards, this procedure appears to be harmless."

Present medical service policy is against the fluorination of water supplies on military posts because the number of children on a military post is usually very small as compared with the adult population. However, as the controlled studies on this subject are continued, there is increasing evidence that older populations may also benefit from this practice. If this point is proved, then it will be desirable for the Army to fluorinate water at posts where the water is deficient in this chemical.

It is the opinion of this Department that, under certain conditions, the fluorination of water supplies is a public health asset and that legislation which would prohibit this practice would be detrimental to the public interests. In this connection, it is to be noted that fluorination of public water supplies has been accomplished in 703 communities with an estimated population of 16,500,000, and that scientific studies in these areas indicate that great benefits in the reduction of dental caries have been derived from the fluorination of water,

For the foregoing reasons, the Department of the Army, on behalf of the Department of Defense, recommends that H. R. 2341 be not favorably considered.

The Department of the Army is unable to estimate the fiscal effects of the proposed bill.

This report has been coordinated among the departments and boards of the Department of Defense in accordance with procedures prescribed by the Secretary of Defense.

The Bureau of the Budget has been consulted and advises that there is no objection to the submission of this report to the Congress.

Sincerely yours,

ROBERT T. STEVENS,
Secretary of the Army.

OFFICE OF THE POSTMASTER GENERAL,
Washington 25, D. C., May 13, 1953.

HON. CHARLES A. WOLVERTON,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D. C.

DEAR MR. CHAIRMAN: Reference is made to your request for a report on H. R. 2341, a bill to protect the public health from the dangers of fluorination of water.

The Department does not treat drinking water with fluoride and so far as it is aware it does not make water so treated available to the public.

This Department is not in a position to report on this measure because it does not have the requisite technical knowledge necessary to formulate an opinion concerning the propriety of treating drinking water with fluoride.

The Bureau of the Budget has advised that there would be no objection to the submission of this report to the committee.

Sincerely yours,

C. R. HOOK, JR.,
Deputy Postmaster General.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
Washington, January 20, 1954.

HON. CHARLES A. WOLVERTON,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington 25, D. C.

DEAR MR. CHAIRMAN: This letter is in response to your request of February 4, 1953, for a report on H. R. 2341, a bill to protect the public health from the dangers of fluorination of water.

The bill would categorically prohibit Federal, State, or local governmental agencies from treating public water supplies with any fluoride compound and from making water so treated available for use by or on behalf of any such agency. No provision is made with regard to the enforcement of these prohibitions.

After some years of careful study and observation, including a review of many independent investigations, the Public Health Service of this Department arrived at the conclusion that the adjustment of the fluoride content of public water supplies is a safe, effective, and economical procedure for the partial prevention of tooth decay. The Service is continuing with its own research, with research carried on by grants to independent groups, and in its observation of separate studies being made by others in order to leave no stone unturned in its vigilance to protect the public health and safety of the people of this country.

It is the view of this Department that the decision on whether to fluoridate public water supplies should continue to rest with the local communities. We believe that they are entirely competent to make such decisions and that Federal intervention, either to require or to prohibit fluoridation, would not be justifiable.

We therefore recommend that H. R. 2341 not be enacted by the Congress.

The Bureau of the Budget advises that it perceives no objection to the submission of this report to your committee.

Sincerely yours,

OVETA CULP HOBBY,
Secretary.

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington 25 D. C., May 7, 1954.

HON. CHARLES A. WOLVERTON,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington 25 D. C.

MY DEAR MR. CHAIRMAN: This will acknowledge your letter of April 20, 1954, requesting the views of the Bureau of the Budget on H. R. 2341, a bill to protect the public health from the dangers of fluorination of water.

This bill would make it illegal for Federal, State, or local agencies to treat public water supplies with any fluoride compound and to distribute such water for use by the public.

The treatment of water with fluorides has been given extensive study by the Public Health Service and many independent agencies. As a result of these studies the conclusion has been reached that the proper amount of fluoridation

of public water supplies is a safe, effective, and economical means for the partial prevention of tooth decay. The principle of fluoridation of potable water supplies as a means of preventing dental caries was endorsed by the house of delegates of the American Dental Association in October 1950, by the governing council of the American Public Health Association in October 1950, by the Surgeon General, Public Health Service in April 1951, and by the American Medical Association in December 1951.

Furthermore, the actual adoption of the practice of water fluoridation is, of course, a matter for decision by the local community and should remain so. It is believed that the States are quite competent to make such a decision without Federal intervention.

For these reasons, the Bureau of the Budget recommends against the enactment of H. R. 2341.

Sincerely yours,

DONALD R. BELCHER,
Assistant Director

The CHAIRMAN. We are beginning hearings this morning on H. R. 2341, a bill which would prohibit the United States Government, the government of the District of Columbia, every State, and every municipality, or other political subdivision of a State, from treating any public water supply with any fluoride compound, or from making any water so treated available for general use in any hospital, post office, military installation, or other installation or institution owned or operated by the United States Government, the government of the District of Columbia, and State, and any municipality or other political subdivision of a State.

The first witness this morning will be the Honorable Roy W. Wier, a Member of Congress from Minnesota who introduced the bill by request.

STATEMENT OF HON. ROY W. WIER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MINNESOTA

Mr. WIER. Mr. Chairman and members of the committee, as the sponsor of this bill, which was introduced a little over a year ago, my role here this morning and my participation will be very limited, because I know that there are 2 or 3 scheduled to be heard this morning who are very anxious to be heard so that they may get away to attend to other tasks. I am a layman in this field, but the introduction of this bill has been of great interest and concern to me. This is a very controversial bill. I want to assure the committtee of that.

During my 6 years here, Mr. Chairman, I have received more mail and communications and material for the bill now before you than on any other subject or issue pending in the Congress during those 6 years. I was tempted this morning to bring over the file of communications that I have received from all corners of this Nation, from people of many walks of life, many conscientious and sincere people; likewise, many people who have spent a long time in the field of medicine. I have proponents for this bill coming from the medical profession; the dental profession; the chemical profession; the engineering profession; and those professions related to this subject. It is not one-sided by any stretch of the imagination, as I think will be brought out here during the process of your hearings.

My introduction of this legislation was prompted by a limited number of people in my own community, and then further impetus was given to the controversial nature and justification for this bill when

I came to Washington 2 years ago and met with a number of people here in the District who have been in this field for some time. I have been working with a committee in the District of Columbia headed by a Miss Vera Adams, president, and Mr. Claude Palmer, a member of the board of directors. The committee is known as the National Committee Against Fluoridation. They have been advising with me, giving me considerable information, and lending their support to this cause.

With all of this information and contacts and my own thinking through, if I could lend any point in my observations as a result of my experience in the past year, I would advise the committee that in my opinion I would feel that the Federal Public Health Service has got a little overzealous in this field and has gone overboard, because this is something that is not to be decided within a period of a month or a year. The results from a long study and research, documented evidence, will be presented to the committee this morning, and in the interest of the American people, I would feel that the Federal Government—and I say Federal Government because here a Federal agency seems to be the center of the sponsorship of fluoridation, and so my criticism would be leveled at the lack of caution with which that agency has moved in this field. I think that will be covered likewise.

Mr. Chairman, I know Mr. Ford has to get to Jacksonville, Fla., as soon as he can, and I do not want to take too much time, because you have a long list of very capable and very professional people here.

I want to take this occasion, Mr. Chairman, to thank you and the members of the committee, for affording these thousands and thousands of people in the United States an opportunity to be heard and to offer to your committee and the Congress their views, their reactions, and their findings on this most important question of the health of the American people.

With that I will close. I will go to my own committee now on the physically handicapped, and again thank you in behalf of all these thousands of people.

Before I leave I want to introduce to you the sponsors of this meeting who will take over, and from the proponents' side they have given you a list of the speakers that have been invited to appear here, both as to who they are and as to the position in which they will speak. We would like the proponents to have the first half of the time.

The CHAIRMAN. We shall have to determine our procedure. It is our intention to hear the proponents this morning. We may hear some of them this afternoon. We want to make certain that both sides have an opportunity to be heard. We do not know what the situation will be with respect to the House floor, and for that reason I want to make certain that the people who have come a long distance will have an opportunity to be heard.

Mr. WIER. That is right, and they paid their own way.

I want to introduce the people who will manage the proponents' side of this legislation.

First, there is Miss Vera Adams, representing the National Committee Against Fluoridation.

Then there is Mr. Claude Palmer, one of the members of the board of directors of the District of Columbia Committee Against Fluoridation, who will rather bear the burden of the management of the proponents of this legislation before the committee.

The CHAIRMAN. We thank you, Mr. Wier, for appearing here and for the time you have taken in preparing the list of witnesses you have submitted to us.

In order to accommodate our colleague, Mr. Ford, who speaks in opposition, we will hear him at this time.

STATEMENT OF HON. GERALD R. FORD, JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN

Mr. FORD. Mr. Chairman and members of the committee, initially let me express my appreciation for the opportunity to present my point of view at this time. It is a very great accommodation for me and I appreciate it.

Mr. Chairman, I represent the Fifth Congressional District in Michigan, which includes the city of Grand Rapids, a community of 176,000 people, and the city of Grand Haven, Mich., a community of approximately 8,000 people, both of which do have fluoridation at the present time.

Grand Rapids, I believe, was in the forefront in this program. According to information provided me, the community has used fluoridation since January 1, 1945. The city of Grand Haven has used fluoridation since October 1952.

Another community in my district is Holland, Mich., and although they have not used a similar program to those that exist in Grand Rapids and Grand Haven, they do have some variation of the utilization of fluoridation.

I am testifying this morning because in my congressional district, and in particular the communities that I mentioned, there is a very, very strong feeling that we in those communities should have the right to decide for ourselves whether or not we, as a community, should use fluoridation. The program, in our estimation, has been successful in the communities which have used it. There has been in the past 9 years considerable testing conducted in the city of Grand Rapids as a result of this fluoridation program. I have a number of documents here which indicate the alleged success of this program, and I would like to give you some of the alleged results of fluoridation in the city of Grand Rapids.

I am now quoting from a paper by Francis A. Arnold, Jr., D. D. S., and Trendley Dean, D. D. S., and John W. Knutson, D. D. S., D. P. H., on the Effect of Fuoridated Public Water Supplies on Dental Caries Prevalence. It is a 7-year study of the situation in Grand Rapids, Mich., which, as I indicated, does have fluoridation, comparing it to Muskegon, Mich., a community which does not have fluoridation. The summary from this paper is as follows, and I will quote from it:

> The methodology and results after 7 years of the Grand Rapids-Muskegon study have been described. The 1951 results on continuous resident children after 6½ years of fluoridation of the Grand Rapids water supply indicate:
>
> 1. There has been a reduction in dental caries rates in permanent teeth of Grand Rapids children ranging from 66.6 percent in 6-year-old children to 18.1 percent in the 16-year age group. Similar results have been obtained regarding the deciduous teeth.
>
> 2. Similar reductions have not been observed in Muskegon where the water supply remained "fluoride free" until the last 3 months of this study period.

3. This change in dental caries rates at Grand Rapids was also reflected in observations based on objective assessment, that is, a reduction in the number of missing teeth.

4. A comparison of the 1951 caries rates in Grand Rapids with those of Aurora, Ill., shows that, insofar as can be determined to date, the use of a fluoridated water gives the same beneficial effects as does the use of a natural fluoride water of similar concentration.

The mention of the city of Aurora, Ill., I think hits the nub of our objection to this legislation. The city of Aurora, Ill., through natural causes, has a certain amount of fluorine in the water they use in that community. We in the city of Grand Rapids and in Grand Haven, by local action, decided that we wanted to have the same advantage that the people in the city of Aurora, Ill., have for our own health. As I understand, this bill, if approved as is, would prevent us, a local community of Michigan, from doing what we want to do ourselves for our own health's sake, based on whatever judgment we as local citizens deem necessary.

It is almost incomprehensible to me that a local community would be precluded from making a decision of this sort itself if it, as a community, believes there would be certain advantages from such a program. I think that is the nub of the question.

I have a number of communications from reputable dentists in my community. I would not fill the record with those unless the chairman so desires. I do have, however, a communication from the Grand Rapids Chamber of Commerce which I would like to insert in the record without objection. (Other communications will be filed with the committee.)

The CHAIRMAN. You have that privilege. As to the other communications to which you referred, we have received a great many letters, telegrams, and petitions, both for and against this proposed legislation, and it would be impossible to give recognition to all of them in the record, but in order to present the views of your constituents, I think you might make reference to them.

Mr. FORD. Thank you very much.

(The letter referred to is as follows:)

GRAND RAPIDS CHAMBER OF COMMERCE,
Grand Rapids, Mich., May 22, 1954.

Subject: H. R. 2341, fluoridation of water supplies.

HON. GERALD R. FORD, JR.,
United States House of Representatives,
Washington, D. C.

DEAR CONGRESSMAN FORD: The Grand Rapids Chamber of Commerce is opposed to the passage of H. R. 2341 which would prohibit fluoridation of drinking water.

We believe the author of the bill must have based his bill on much of the same erroneous interpretation of records and unfounded accusations of which this organization has many examples in regard to Grand Rapids.

We urge the fullest investigation and opportunity for presentation of evidence in favor of fluoridation and refuting unwarranted, unfounded, and malicious and false reports of adverse effects. The later have included, falsely, increased juvenile delinquency, moral degeneration, heart, brain, respiratory, and circulatory disorders and deaths, and other dreamed-up and trumped-up charges, all of which are disputed by the records. Even abortions were alleged to have increased, which is similarly belied by the records.

There seems to be a mass hysteria about the subject which should be dispelled along with the religious and other prejudices in regard to the subject.

Michigan and Grand Rapids have a tremendous industrial as well as health stake in this matter.

No action should be taken on this bill until the fullest hearings have been held and the facts have publicly demonstrated that this bill should not pass.

Sincerely,

ALEX T. MCFADYEN,
Executive Secretary.

Mr. FORD. There is one point that may conceivably be raised subsequently in this record. The assertion has been made that the vital statistics of Grand Rapids, Mich., show an increased number of deaths from heart disease, intracranial lesions, and nephritis since the program of fluoridation was initiated.

The facts on this particular phase of the controversy are as follows:

This statement presents an erroneous implication because it is based on a comparison of 1944 data for the city of Grand Rapids—

which, incidentally, was before the fluoridation program began—

with 1948 data for the whole of Kent County in which Grand Rapids is situated. Reliable population data for this area are available from official agencies in Grand Rapids and in the State of Michigan and are based on an intimate knowledge of shifts of population in and out of the city.

Actually, changes in the death rates in Grand Rapids have not been significantly different than for the country as a whole. A claimed increase in the number of deaths from heart disease in 1949 is not a fact but is due to a 1949 revision in the classification in recording deaths.

I think that particular statement is important for the record because I have heard on the floor of the House allegations made that the statistics in Grand Rapids and Kent County prove beyond a question of a doubt that fluoridation resulted in an increased death rate in certain areas.

In closing my statement I would like to reemphasize that our objection to this legislation is that the Federal Government should dictate to us what we as communities can do. If this legislation is enacted as it is, it would preclude us, a community in the United States, from deciding whether or not we want to derive the same benefits that a city like Aurora, Ill., has where they have flourine in their water from natural causes. It should be up to us, a community of 176,000, to make the decision as to whether or not we want to implement our water supplies so that we can get whatever benefits now accrue from natural causes.

I shall be very glad to answer any questions.

The CHAIRMAN. Any questions? Mr. Heselton.

Mr. HESELTON. I am sorry I could not be here during all of your statement. Did you indicate when Grand Rapids adopted fluoridation?

Mr. FORD. Grand Rapids started using fluorine in its water supply on January 1, 1945.

Mr. HESELTON. Was that as a result of vote of the city council or the community as a whole?

Mr. FORD. The decision was made by the governing fathers of the community. No effort was made in Grand Rapids to stir up a problem with the electorate. It was purely an administrative decision based on factual data presented to the proper city authorities. We have had no trouble whatsoever in that community as a result of this program being initiated.

Mr. HESELTON. Thank you.

The CHAIRMAN. Any further questions? Mr. Priest.

Mr. PRIEST. Mr. Ford, I have approached this legislation with an open mind in an effort to get all the information I can on both sides of the question. I will be particularly interested in the scientific testimony that is to be presented here. You take a position that is inherently a position I usually take, that is, that your community of 175,000, which is about the same size as my community, should have the right to make such a decision without Federal intervention. I could easily see how perhaps a strange interpretation might bring the Federal Government into the field, particularly with reference to water supply for our Federal installations within a city. Other than that, and with the possible exception of a project that might be sponsored by a local public health service cooperating with the Federal Public Health Service, it is difficult for me to see a constitutional basis for Federal Government action in a situation of this sort. Have you given some thought to that phase of it?

Mr. FORD. Mr. Priest, frankly, I have not had an opportunity to thoroughly investigate the constitutionality of this legislation. I would, from my experiences as a lawyer, say there might justifiably be a serious question as to the constitutionality of this proposal. I would, however, leave that up to those who are constitutional lawyers by experience. My prime objection, as I have indicated earlier, is the attempt by the Federal Government to tell the people in our Nation who are mature and who I think are as wise as some of the Federal fathers, what they can or cannot do. I would certainly object to any legislation that would extend the omnipotence of the Federal Government.

Mr. PRIEST. It is largely a question of philosophy rather than constitutionality or legality, and I must say I share that feeling with you in general. I think we do better with a minimum of Federal Government direction rather than a maximum.

Mr. FORD. I might say that it would be most unjustifiable for anyone to allege that responsible city officials in any community would seek to undertake a program that would be harmful and detrimental to the health of the people in that community.

Mr. PRIEST. We have in my own State, although not in the district I represent, a situation similar to what you described in the town of Pulaski, Tenn., the county seat of Giles County, a town of about 6,000 population. The water supply of that town has a natural content of fluorine. I have received some very interesting statistics which I hope to put in the record with reference to a comparison of vital statistics in that town with other nearby towns that do not have that natural supply and have not added any artificial supply. As I expressed to you in the beginning, I am approaching this legislation with an open mind because I have received such positive statements on both sides of the question.

That is all, Mr. Chairman.

The CHAIRMAN. Any further questions? Mr. Springer.

Mr. SPRINGER. May I ask my colleague if he is a lawyer?

Mr. FORD. Yes, I am.

Mr. SPRINGER. I am wondering under what section of the Constitution the proponents are justifying this proposed legislation?

Mr. FORD. I suppose the general welfare provision of the Federal Constitution. Frankly, I have not gone into the constitutionality of

this proposed legislation. My firm objection rests on different grounds.

Mr. SPRINGER. There is no doubt that anything that has to do with health is under this committee. The point I am trying to find out is just how you would regulate health. I believe I will yield back, Mr. Chairman, until I look into this further.

The CHAIRMAN. Any further questions? Mr. Harris.

Mr. HARRIS. Mr. Ford, is not the basic philosophy behind this legislation that those who propose to use fluorine for this purpose need to be protected from their own misgivings as to what this will do?

Mr. FORD. I think that is true, but let us see if we could carry that philosophy to the ultimate extreme.

Mr. HARRIS. In other words, is not the basic philosophy behind those who are sponsoring this type of legislation, that even if the people of Grand Rapids, Mich., might decide themselves that they want to use it, they do not know what is best for them and the proponents of the legislation know what is best for them and want to protect them from their own ill-advised feeling?

Mr. FORD. I think that quite definitely is the philosophy of the legislation. May I say that if you carry that philosophy to the extreme, however, and if you want to be perfectly honest, you have to add certain words to the legislation. The bill should say that communities shall not be able to treat any public water supply with any fluoride compound, and you must add to that that any community must remove from its water supply any natural fluorines which already exist. Otherwise you are being completely inconsistent. If a community that has fluorine in its water naturally is permited to go along and use that water supply, it is doing something harmful and deleterious to the public just as much as any community that adds fluorine to its water supply. So I think to be perfectly fair and honest if people believe in this philosophy they should also seek to remove as well as prevent the addition of fluorine.

Mr. HARRIS. Do you know whether or not there is a religious background attached to this proposal?

Mr. FORD. Not that I know of.

The CHAIRMAN. Any further questions? Mr. Pelly.

Mr. PELLY. Regardless of the merits or demerits on a scientific basis, have you had occasion to observe the tendency in our Public Health Service to accomplish by policy and regulation objectives which are beyond their scope?

Mr. FORD. Mr. Pelly, I am not qualified to answer that question. All I know is that in the communities in my district which use this program, I think it was more or less locally sponsored. I know it has been carried on under the supervision of the local public health authorities. I also know that certain observers have come in from the Federal Public Health Service to make checks as to the success or failure of the program, but we instituted the program, we have carried it out, and we like it, and we would not like the Feleral Government telling us that we should not have it.

Mr. PELLY. Do you think it is right that the Public Health Service should stimulate, encourage, and do everything they can to promote local fluoridation as a matter of departmental policy without its being within the realm of the desire of the Congress?

Mr. FORD. I do not think the Public Health Service or any other agency should be a propagandizing agency for any pet project that they have, but I think they have a responsibility to make what scientific data that they have available, available for communities which express an interest.

Mr. PELLY. Here is a program that is very controversial and on which scientists themselves seem to disagree, and it seems to me that the Public Health Service has taken upon itself to decide that it is scientifically justifiable and they have actually carried on a program of propaganda. I myself have no knowledge or basis for saying whether the program is good or bad, but I do object to the departments of Government accomplishing by regulation what is not the intent of the law.

Mr. FORD. I certainly concur in that general observation, but from my own experience and observation in my own community I doubt if anybody but the local people decided that they wanted the program. We decided it; we like it; and we certainly object to Uncle Sam telling us we cannot do it unless he wants to tell the communities that have natural fluorine they cannot use it either.

Mr. PELLY. We had some legislation recently dealing with the grants-in-aid program, and we were told if the Public Health Service desired to do so, with the Surgeon General's approval, they could take the grants-in-aid funds and finance fluoridation in a community. It seemed to me that was going pretty far.

Mr. PRIEST. Will the gentleman yield? I believe it had to be with the approval of the local community. They could not go ahead without the approval and cooperation of the local community.

Mr. PELLY. I would say they would not necessarily have required local approval but would have been financing a research program which would not require local approval or State approval.

Mr. PRIEST. It seemed to me that even in the beginning it required the cooperation and approval of the local community or the State, or whatever subdivision of government was involved.

Mr. PELLY. I would certainly defer to my distinguished colleague on health legislation, because he has had great experience in that.

The CHAIRMAN. Any further questions? Mr. Younger.

Mr. YOUNGER. Mr. Ford, it is your idea, I gather, that you believe a local problem should be settled locally. Do you also believe it would be wise to have a local vote on the subject?

Mr. FORD. I think there should be a local vote if the local community thinks that is proper. If a local community does not want a vote, I do not think the Federal Government should impose its will in that regard either. I think that would be definitely beyond the authority of the Federal Government.

Mr. YOUNGER. There is no legislation that you know of about putting chlorine in water, is there?

Mr. FORD. I am not familiar with that.

Mr. YOUNGER. That is all.

The CHAIRMAN. Any further questions?

Mr. BENNETT. Have you given any thought to the question of whether the Public Health Service should be restricted in its activities in selling the idea of fluoridated water to States and localities? It has come to my attention that the Public Health Service over the

past few years has devoted considerable time to sending people around to States and localities in order to sell them on the advisability of fluoridating their water. I am inclined toward your view that the matter should be within the discretion of the local community, but I am wondering if it might not be advisable to give consideration to whether the United States Public Health Service should be limited in its activities to sell this program and to try to convince communities that are otherwise not interested that they should have it. In other words, should the United States Public Health Service be restricted in spending public money to go out and try to sell the program?

Mr. FORD. Mr. Bennett, I personally feel about the activities of the Public Health Service in this field as I strongly felt about the public-housing people going out in local communities and trying to impose upon local communities low-rent public housing. I violently opposed that, and I suspect I would oppose any propaganda program by the Public Health Service in this field. Let me say I am not qualified to say whether or not fluoridation is successful except from what information is given to me. I am not a doctor or a scientist. But the proper officials in the communities I mentioned, who are technicians, do believe there are benefits from the program and they have convinced the govening fathers that it should be used. I do not believe the Public Health Service initiated the action the communities have taken. In the case of Grand Haven, I suspect that because of the success of the program in Grand Rapids, they followed suit some years later.

Mr. BENNETT. I am perfectly willing to leave the matter up to the people who are directly concerned. On the other hand, I question the wisdom of the Federal Government appropriating money for an agency to try to propagandize in favor of a program. In view of the controversial nature of the subject and the violent objection that many people and many communities have, I doubt the wisdom of having any agency of the Federal Government going out and trying to sell it.

Mr. FORD. It is pretty hard to try to draw a line of distinction. Will we get into the same problem as to whether we should adopt the program of immunization against poliomyelitis? The local people should decide whether they want their children inoculated, or whatever the term is.

Mr. BENNETT. Once you authorize the Federal Government to spend money to sell a program, you are giving that program the blessing of the Federal Government and whether it is good or bad or whether it is desirable in a particular community or not, you are nevertheless making a Federal program of it.

Mr. FORD. I think this committee probably would be the best vehicle to determine whether or not the Public Health Service has gone beyond its proper function.

Mr. BENNETT. That is all.

Mr. HESELTON. Have you seen the reports from the departments on this legislation?

Mr. FORD. No, sir.

Mr. HESELTON. With reference to the question of constitutionality raised by Mr. Springer, I would like to quote this sentence from the report of the Department of the Interior:

It would appear also that to the extent H. R. 2341 purports to control State action concerning local health matters it would be subject to constitutional objections.

I thought you might like to have that particular expression in your presentation.

Also, I thought you would be interested in this quotation from the report of the Bureau of the Budget:

Furthermore, the actual adoption of the practice of water fluoridation is, of course, a matter for decision by the local community and should remain so. It is believed that the States are quite competent to make such a decision without Federal intervention.

So apparently there is no disposition on their part to impose a Federal decision on the local communities.

Mr. SPRINGER. I have been looking at the Constitution here, and the only section which has to do with providing for the common defense and general welfare would be section 8. I see nothing in the Constitution relating to the word "health." I do not think health was considered when the Constitution was written, and there is no amendment that would bear on this at all. The question that arose in my mind was, if you can regulate this, why could you not regulate everything having to do with public health in any city? Why not regulate the size of a hospital in a particular city and how the hospital shall be conducted if we have this power over health? That is the point that has arisen in my own mind. I do not know what the decisions say. I think whoever wrote the bill tried to get around the constitutionality by these words—

or make any water so treated available for general use in any hospital, post office, military installation, or other installation or institution owned or operated by or on behalf of any such agency.

I do not know; they might have some control over a post office or military installation, although it does appear to me that is stretching it to an extreme point. This is just a curbstone opinion, but looking at the Constitution, I do not see anything in the Constitution that gives power over health.

The CHAIRMAN. Any further questions?

We thank you, Mr. Ford, for your appearance here this morning. We are glad to have your views.

Mr. FORD. Thank you again, Mr. Chairman.

The CHAIRMAN. I have a list of witnesses prepared by Mr. Wier of those interested in this bill, and the order in which those names have been given to me would seem to indicate it was the intention to call Mr. Claude Palmer next. Is that right?

Mr. PALMER. That is correct, Mr. Chairman.

The CHAIRMAN. Mr. Palmer, if you will give your name and the position that you occupy and for whom you speak here this morning, we will be glad to hear your testimony.

STATEMENT OF CLAUDE N. PALMER, MEMBER, BOARD OF DIRECTORS, NATIONAL COMMITTEE AGAINST FLUORIDATION

Mr. PALMER. Thank you, Mr. Chairman and gentlemen.

I am Claude N. Palmer. I am a director of the National Committee Against Fluoridation, which is incorporated under the laws of the District of Columbia.

I am employed as director of trade relations by a trade association in the fresh fruit and vegetable business. My appearance here has nothing to do with my commercial employment. I am appearing here solely as a member and director of the group opposed to fluoridation in Washington.

Mr. Chairman, with your permission we would like to change the order of our witnesses and have our counsel, Mr. Vincent Kleinfeld, follow me if that is agreeable.

The CHAIRMAN. I would like to call to your attention, Mr. Palmer, and others waiting to testify either for or against this bill, that the tremendous schedule of work that this committee has before it has required it to fix a limitation of 3 days for the hearings on this bill, and we wish to hear during those 3 days those who are for and against, so that we would ask each of you to conserve time so that we may hear as many witnesses as possible. Otherwise, it will be necessary to take the statements of the witneses and make them a part of the record without their personal appearance. I might say in that connection we find very frequently witnesses prefer to do that, so that if there are any witnesses here today for or against this legislation who would like to present a statement and have it made a part of the record, if they would kindly notify the clerk, we will see that that is done.

Mr. PALMER. Thank you, Mr. Chairman. That is my intention and I think the intention of other witnesses for the Wier bill. I have filed a written statement with the clerk, and I intend to cover the salient points briefly, which I have in note form.

The CHAIRMAN. In the event you do abbreviate your statement, you may rest assured that your full statement will be made a part of the record.

Mr. PALMER. Thank you, sir.

If it is proper, I would like to say just a word or two about the testimony of the previous witness. Certain of his statements I am sure our group would agree with wholeheartedly.

Do you mind my standing, Mr. Chairman? I speak a little better standing.

The previous witness said that the results of fluoridation in Grand Rapids were "alleged." He used the word "alleged" several times. We find that most of the reports on the brilliant results of fluoridation on children's teeth are not based on a very scientific basis.

Also, the witness said that this is a matter for the States and local communities to decide. We would agree with this wholeheartedly if it were not for the fact that as some of the members of this committee have said, the Federal Government is already into that problem up to its neck. The Public Health Service seems to be the sparkplug that generates the desire for fluoridation in communities throughout the country and as far away as Alaska.

The previous witness has referred to Grand Rapids as a city of 176,000 people. If the people of voting age in the city of Grand Rapids had received information on both sides of this question, not merely the information that the United States Public Health Service and the local health officials wished to give them, if they had received a fair appraisal of the question of fluoridation on both sides, I doubt very much that Grand Rapids would have fluoridation because, as your colleague, Dr. Miller, once said on the floor of the House, almost every time the question of fluoridation has come to a public vote, it has been defeated. We know of only one city, San Francisco, where a vote on the question won. In that case most of the people who voted for it thought they were voting for the continuance of the use of chlorine in the water as a purifier.

I am not a scientist. I have been a student of this subject for about 2 years. There are volumes of printed literature on the subject, excerpts from some of which I am attaching to my prepared statement.

Just as a matter of information, the organization I am speaking for was the result of the efforts of two freedom-loving women who perhaps did not have so much objection to the presence of a certain amount of fluorine in public drinking water as they did to the fact it was being forced on them without their consent. Their objective was to give the public both sides of the story and they expected the District government to cooperate. However, whenever members of the District government were invited to appear, representatives of the District government refused to cooperate. In one radio broadcast of a half hour, 15 minutes were to be given to us and 15 minutes to the other side, and the local dental authority said he would not appear, that he preferred to let sleeping dogs lie. I do not know whom he was referring to as the dogs, but they were not there.

We have had various requests from various parts of the country, and from as far away as Alaska, to form a national organization which could spearhead this drive against compulsory fluoridation, and recently we changed the name from Citizens Committee on Fluoridation to National Committee Against Fluoridation. We were against this before, but some people did not quite understand that.

We have found great disagreement among the proponents of fluoridation as to the quantity, as to the method, and as to the results. You will find some disagreement among our witnesses. Some of the witnesses who will follow me may disagree with some of the things I say. That is because the whole subject is up in the air. It is unknown. Science does not know the effect of fluorine, even in minute quantities, over a life span. The question of deaths from heart disease and nephritis in Grand Rapids was brought up. We will not claim that the fluoridation of water had any effect in the deaths from those chronic diseases, but it cannot be proved that it did not.

In my prepared statement there are several references to the chemical properties of fluorine and its derivatives. I want to read one paragraph from an advertisement of the International Nickel Co., which manufactures equipment for the handling of chemicals and apparently at last felt it had discovered a way to handle fluorine. The text is brief, and I quote:

Imagine, if you can, an element so fierce it burns up steel. One that claws its way through firebrick, makes water burn like alcohol, destroys almost every-

thing it touches. That's fluorine for you. And for over 200 years, chemists racked their brains to find some material that would hold fluorine for even a few minutes' study. Numerous materials were tried. Most went up in a flash.

That is why, gentlemen, we believe it is unfair to introduce into our water supply, for the benefit of a small fraction of the population, requiring everyone of every age and condition of health to consume it on a life-long basis.

Now, I am resuming my prepared statement concerning the policy of fluoridation by itself. That has been brought up a number of times by members of this committee.

We know very little of what the United States Public Health Service is doing, because the United States Public Health Service does not publish a statement, so far as I know, of how it is going about the job of promoting fluoridation.

We have been told of flying squadrons of bright young chemists, bright young scientists who have gone from city to city, meeting with chambers of commerce, boards of education, parent-teachers associations, medical and dental scientists, to tell them the bright side of flouridation, that will preserve the kiddies' teeth and I grant you that anything that is for the children, of course, has a strong emotional appeal.

We find that State health departments, dental societies, and others have joined in this cry; and we find that also in some of these institutions, having research projects and other projects which are financed by grants in aid of which the United States Public Health Service holds the purse strings, there may be no analogy between those, but we have found, gentlemen, that scientific witnesses who appeared before the Delaney Committee 2 years ago and were bitter in their denunciation of fluoridation are now unwilling to testify before this group, or now find it inconvenient. The inference is drawn that inasmuch as each of the institutions with which these witnesses are connected is receiving a grant-in-aid of some kind, that while, personally, no pressure may have been brought to appear may be inspired by a wish not to offend the United States Public Health Service.

Gentlemen, much of the objection to compulsory mass life-long fluoridation is based upon the question of toxicity, to the poisonous or injurious nature of fluorine taken in small quantities over a long period of time.

Something more than 2 years ago there was held here in Washington under the auspices of the United States Public Health Service and the Children's Bureau what was known as the Fourth Conference of State Medical Officers. A printed report of the proceedings was available for a time, but seems to have disappeared pretty much. Anyone who reads that with an open mind, I think, behind closed doors certain officers of the United States Public Health Service, and certain State health officers laid themselves open.

For instance, the spokesman for fluoridation was one Dr. F. A. Bull, director of dental education for the Wisconsin State Department of Health, and in one place, and I am quoting, he said—Dr. Bull was talking about the toxicity of fluorine, and said:

When they take us at our word, they make awful liars of us.

I would not use that word "liars" if it were not in an official Government statement.

I would like, with your permission, to quote just a little more from Dr. Bull, who occupied practically the entire morning and was introduced by Dr. Knudson, formerly of the United States Public Health Service.

Dr. Bull stated:

> If you can—I say if you can, because five times we have not been able to do it—keep fluoridation from going to a referendum. After you have just a little experience, you will find you can walk into a mayor's office, after about three sentences, you will know whether he is for fluoridation or against it.

Then going on, Dr. Bull says:

> Now, in regard to toxicity, I note that Dr. Bain—

Dr. Bain was the lady doctor representing the Children's Bureau—

> used the term "adding sodium fluoride" we never do that. That's rat poison.

And I would not use the term "rat poison" either, if it were not in an official statement by a pro-fluoridationist.

Continuing with the statement:

> You add fluorides; never mind that sodium fluoride business because in most instances we are not adding sodium fluoride anyhow. All of those things give the opposition something to pick at and they have enough to pick out without our giving them any more. But this toxicity question is a difficult one. I can't give you the answer on it. After all, you know fluoridated water isn't toxic. But when the other fellows says it is, it's difficult to answer him. I can prove that we don't know the answer to that one, because we had a city of 18,000 that was fluoridating the water for 6 or 8 months. A campaign was started by organized opposition on the ground of toxicity. It ended up in a referendum and they threw out fluoridation.

Gentlemen, there is an example of scientists being unwilling to let the public decide; as the gentleman who preceded me said, if you let the community decide, all right. But if the Federal Government is providing one of its agencies with money to propagandize fluoridation, right or wrong, let the Federal Government provide an equal sum of money to give the opposition information, and there is plenty of it.

Now, I am asking in my prepared statement that fluoridation live up to its claims. We have reports of pilot experiments at Newburgh, N. Y., Grand Rapids, Mich., Saginaw, Mich., Evanston, Ill., and there are probably others.

Now, we say the statistics, and I will give you the reason for that also a little later on, that the statistics received from these pilot experiments are misleading in that they do not go below surface indications. We say also that the beneficial results obtained in the pilot cities, where fluoridation was compared with nonfluoridation cities, is probably deceptive, because other methods than the fluorine were used.

Now, to get at some real statistics that we can rely on, I would like to compare the two cities of Brantford, and Toronto, Canada. In Brantford, a 31 percent improvement was announced by the city health authorities after 6 years of fluoridation; that is 31 percent less decay, filled teeth or missing teeth.

In Toronto, during the same period, which did not fluoridate its water, an improvement of 45.3 percent was reported by the city health

authorities. Thus comparing the 2 percentages, Toronto showed 46 percent better result with children than fluoridated children. Then the city authorities in Toronto said it is simple; we merely taught them proper hygiene; we taught them proper diet; we taught them exercise, and we taught them how to brush their teeth, thoroughly, regularly, and properly, to avoid sweets, to avoid carbonated drinks, and to eat the right sort of foods. That will go hand in hand with any reasonable public health measure that has for its aim the saving of the children's teeth.

Now fluoridation is prescribed; it is prescribed by primarily the United States Public Health Service, as a nationwide prescription, although their scientists differ. Some say as little as one-half of 1 part per million is injurious; some say that one part is helpful, and not injurious; some say 1.2 to 1.5 percent. They do not agree, and I do not believe that they know.

We would like to know, granting that the recommended amount of fluorine is correct, we would like to know how accurately that prescription is filled. When you gentlemen get a prescription from your doctor, you take it to a competent pharmacist to have it filled. We have a little statistics on that. But an article appearing in Waterworks and Sewage magazine signed by the sanitary engineer of the city of Charlotte, N. C., in which a table of differences of fluorine content in samples of water taken each month for 12 months from August 1950—from September 1950 through August 1951, showed a difference of as much as 15 parts per million above the accepted dosage to 35 percent below, or a difference in range from top to bottom of 50 one-hundredths part. In other words, half of the prescribed dose.

The findings of the water department were also checked by the health department separately, by the Charlotte Water District, and by an Army base in that area which drew its water from the Charlotte district. Each 1 of the 4 cities that made this test differed from the other materially; some ran even higher than the 15 percent shown by the water-plant test. In no single month was there complete agreement of all four tests. And what I think the public should be told is when there is an excess of fluorine in the water over the prescribed dosage, where does it come from? And when there is less than the prescribed dose, where did that fluorine go? I think it will be brought out by witnesses here that some of that fluorine probably is stored up in the pipes somewhere along the line; certainly if water goes into the pipe at the plant with certain concentration, it ought to come out a few blocks or a few miles away from where it went in; should it not?

It comes out sometimes with a higher content and sometimes with a lower content.

That is one of the mysteries that makes people frightened and skeptical about the assurances they are constantly receiving that this thing cannot hurt anybody.

Now as to the corrosive action of fluorine on water-plant equipment. I read you briefly from what the International Nickel Co. said. I am going to give you a little of the experience of Madison, Wis. Madison, Wis., is proud to say, for about 5 years, it was ahead of the rest of the country in fluoridating its water. Madison is so confident that, instead of using one of the fluorides, or the sodium fluorides or the

sodium silicate fluorides, it used hydrochloric acid. That is the stuff that burns up glass and burns up iron and wood, and a drop of it on your hand would probably cause an incurable sore. It is used because it is cheaper as it mixes with water. But I am going to quote briefly from a statement by Mr. H. E. Worth, assistant sanitary engineer of the State board of health of Wisconsin, who, by the way, is strongly in favor of fluoridation. His statement was made at a conference on fluoridation at the University of Washington in Seattle, and I believe we may have witnesses here who were present at the time that statement was made. If you will bear with me, I would just like to give you some of Mr. Worth's statement. Incidentally, after receiving a copy of Mr. Worth's statement, I wrote him and asked him if it were correct, if he had been properly quoted, and he sent me a copy which agreed with the copy that I had, and he had some other information added to it. I picked out some of the more salient points, and I quote:

Some operating difficulties have been noted, such as the clogging of solution piping by disposition of inert materials, the presence of foreign material consisting of pieces of heavy paper, slivers of wood, nails, and staples, found in compound described as 98 percent pure white sodium fluoride. There is also the more difficult problem of incrustation.

This problem, common in hard waters, has been experienced in soft waters as well. When mixed with the water supply, sodium fluoride forms a precipitate with the calcium in the water which plugs in the injection lines, incrusts tanks and solution chambers.

Even in soft-water makeup, precipitates form in the tank which, if not periodically removed, plugs the feeder. Control of this condition is secured by periodic backwashing of the tanks which brings the sludge to the top where it can be removed. Madison uses cast iron for both tanks. Originally, attempt was made to feed into the well discharge lines. Severe erosion at the point of installation was ever present, however, requiring weekly replacement of the fittings.

Gentlemen, may I repeat those last few words:

Erosion of the metal-mixing machinery requires weekly replacement of the fittings.

We cannot replace our internal fittings very well. Sometimes they do, but once our liver and kidneys and intestines are gone, we probably will not get any more.

That seems to me, Mr. Worth's statement seems to me, to answer in part the question of why in the city of Charlotte, N. C., they found higher and lower concentration when the city plant was trying to keep a level of 1 part per million.

We have talked here of two instances where we have expert technicians handling the equipment, both of them sanitary engineers who have been schooled in the work and know their stuff. And now the next question is, then, what would be the result if the village barber or the tinsmith were to be the man handling the fluoridation equipment? And you may think that is pretty far fetched, to refer to the village barber or the tinsmith. But let me go back to Dr. Bull—at the Fourth Annual Conference of State Dental Officers. Dr. Bull was describing this question of the safety of mixing and metering equipment. Apparently a number of delegates, of engineers and citizens from other States, had come to Madison, Wis., which had pioneered in fluoridation, and were asking for enlightenment and this is what Dr. Bull says, and I quote:

So we took them to several little installations where the village barber is the waterworks man, or the hardware man is the waterworks man. And we turned them over to him, and let the engineers question him and find out what he is

doing and how he is doing it. Now, in large cities, we do not concern ourselves because they know how to handle the equipment and have trained help. But in a small community, where the barber is going to operate the feeder, if anything goes wrong, he throws up his hands.

Gentlemen, is there any wonder that citizens throw up their hands when there are such releases as that in published statements?

Now, in the city of Washington, as I told you, the District officials refused to hold hearings, refused to hear those who wanted both sides of the facts brought out. They have made up their minds and they went ahead and put fluoridation in without public consent. They probably have expert people working in the city water plant. But those employees—they are not pharmacists, they are dealing with a highly toxic element. They are putting into the city water of the District of Columbia and its environs which draw from the same District, 2,800 pounds of sodium silicate fluorides each day. That amounts to more than 1 million pounds, 500 tons, and the quantity has increased as the population in the area increases.

The yearly cost to the District taxpayer for the fluorine alone, not counting the cost of the superintendent, labor, and propaganda, is $71,500. That seems small. But it is large. When the District's estimates made by waterworks officials shows that for every pound of fluoride put into the public water, 99.6 percent is wasted, used for laundering, washing cars, and it goes to people who cannot be benefited by fluoridation, as it is used in industrial plants and what not. So out of our $71,214 invested in the chemical alone, in the District of Columbia, only $286 worth of this treatment can reach children who might be benefited and benefited only partially.

We have heard of one town, and I think it is Grafton, Mass., where a 17-year-old patient in a school for the feeble minded is the one who handles the fluoridation plant.

I want to get to the very much publicized question of the endorsement of fluoridation by the American Medical Association. If one reads the statement issued by the secretary of the American Medical Association during the Delaney hearings, you will find that the AMA council endorsed fluoridation in principle only; the council said it does not know of any harmful effects; they did not say that it was not harmful; they did not say it was; they said, "We do not know of any harmful effect." It is a good deal like the man who said he did not know the gun was loaded. And they did not recommend that any community adopt fluoridation but they did recommend further research and study on the question of toxicity.

Gentlemen, I do not think that is a very strong endorsement of fluoridation by the American Medical Association. It smacks more of professional courtesy toward the American Dental Association so that the doctors don't want to encroach upon the dentists and the doctors of the American Medical Association do not want to have the responsibility—of assuming responsibility of any later harm that may come along.

Now, those who are for fluoridation say there are very strong precedents for universal fluoridation, compulsory fluoridation; that it does not require public approval. They cite among other things the precedent of chlorine in public drinking water, the use of fluorine is not analogous to the use of chlorine, because the function of chlorine is

simply to remove the harmful bacteria or organisms and the chlorine can be removed from the water by boiling; fluorine cannot; chlorine can. By boiling the water, fluorine becomes more concentrated.

They also use compulsory vaccination against smallpox and perhaps some other diseases or the compulsory isolation of typhoid victims in some communities, although those practices are not universal.

Again, they are not analogous to the addition of fluorine to water because they are definite measures against contagious and infectious diseases.

According to the authorities, the cause of dental caries is still an unknown question. No one has ever found an organism in a tooth, either adult or child, which could be identified as the cause of dental decay. And tooth decay is neither contagious nor epidemic nor a menace to public health.

Now, another precedent for universal fluoridation, but one which the proponents of fluoridation carefully refrain from mentioning, I believe was mentioned here this morning, and that was an attempt, a generation ago, to introduce iodine by law into the public drinking water of all communities in the United States as a preventive of goiter. That was done in some communities. I believe Rochester, N. Y., which has since turned thumbs down hard on fluoridation, was the first one. Hardly had that campaign started, however, than the medical profession discovered that the addition of iodine, instead of preventing goiter or curing goiter, encouraged the development of goiter and the process was stopped and those who had proposed it were discredited.

Now, I want to touch a little bit upon the question of Government responsibility in this question of fluoridation.

You gentlemen have probably covered it better than I have, but it has been suggested that H. R. 2341 might invade State police power by prohibiting a State or a community from doing, as a health measure, what it sees fit. We submit that the Federal Government is already doing that by appropriating large sums of money to the United States Public Health Service, part of which money is used directly in the propagandization of fluoridation and parts of which must bear some reasonable relationship to fluoridation because it is used as grants-in-aid to various institutions, where some people, once opposed to fluoridation, have now slightly changed their tune, or quit talking about it entirely. We believe that the measure before this committee, which is probably imperfect, as it was probably written so, contains no penalties; we believe that part of it, however, if the whole of the bill is unacceptable to this committee, and to the Congress, we believe the part of it which would prohibit the fluoridation of water in any such area as the District of Columbia, which is under direct Federal control, the Territory of Hawaii and the Territory of Alaska and in veterans' hospitals and military installations and other communities would be proper and legal.

We would like to see it banned or abandoned throughout the United States. That may be impossible by Federal law, but what is suggested in that part of H. R. 2341 would be a long step toward bringing to public attention the fact that the Congress does not look with favor upon the propagandizing methods of one of the Government agencies.

Thank you.

The CHAIRMAN. Thank you very much. Are there any questions, gentlemen?

Mr. Dolliver?

Mr. DOLLIVER. I notice that you represent the National Committee Against Fluoridation.

Mr. PALMER. Yes.

Mr. DOLLIVER. And were formerly head of the committee on fluoridation.

Mr. PALMER. That is right.

Mr. DOLLIVER. Will you give us an idea who composes that organization?

Mr. PALMER. I am glad you asked that question. Mostly women.

Mr. DOLLIVER. Mostly women?

Mr. PALMER. I would say that the membership is over 65 percent women, most of them housewives.

Mr. DOLLIVER. Are there any scientists among them?

Mr. PALMER. Yes, we have some doctors and we have some dentists and some chemists. The membership has the nucleus here in Washington; it is not great. I believe it is something like 375 members who have gathered.

Mr. DOLLIVER. How many?

Mr. PALMER. Something like 375, but we are the nucleus now of various groups in various parts of the country. There are a good many of them from Florida to Massachusetts and as far as Anchorage, Alaska, where a group has been formed.

We do not ask their individual members to become members of our group, but we have changed to a National Committee Against Fluoridation because most of these people in outlying districts wanted an organization with a national status in the Nation's Capital.

Mr. DOLLIVER. How many scientists are connected with the organization?

Mr. PALMER. You mean physicists and people like that?

Mr. DOLLIVER. I mean in the medical or dental term.

Mr. PALMER. I do not know. We have dentists, and we will have some in here as witnesses at these hearings who are graduates and practicing dentists and physicians.

Mr. DOLLIVER. How do you finance the organization?

Mr. PALMER. As best we can, Mr. Dolliver.

Mr. DOLLIVER. Do you have membership dues?

Mr. PALMER. We have annual dues of $1 at the present time and frankly some of them are reluctant about giving up the buck. The public apathy and inertia to this thing is astounding. People cannot see, they cannot taste, they cannot taste flourine in their water and they say, I feel all right, so what? But there are people who are going a little bit beyond that. Some are saying that is unethical and moral invasion of their rights to control their own bodies. Other people are rather vocal; they do care. Some of them are at times emotional. Maybe some of our witnesses here will appeal to you as a bit emotional. Forgive them if you can because it is an emotional subject to them; it is something new and dangerous.

Excuse me for wandering away from answering your question, directly, Congressman. Have I cleared up the point?

Mr. DOLLIVER. You mean to say that your only financial support is from the $1?

Mr. Palmer. No.

Mr. Dolliver. From the 375 people?

Mr. Palmer. No.

Mr. Dolliver. There must be somebody paying some of the expenses?

Mr. Palmer. As far as I know, the biggest single contribution, and it is from a member, has been $50. There have probably been a few $50 contributions; there have been some $25, and more $10's and more $5's. We do not spend much money.

Mr. Dolliver. Who is your treasurer?

Mr. Palmer. The treasurer—I will have to ask Mrs. Adams.

Mrs. Adams. Mrs. Bertha B. Forney.

Mr. Palmer. If the Congressman is looking for information as to whether we have an "angel," whether we have any financial backing, whether any organization is back of us, there is none.

The assertion has been made here that—and it has been made elsewhere, of course, that this is a bunch of Christian Scientists. I think we do have some Christian Scientists among us. I personally am a Presbyterian. I do not think we have ever inquired as to the religious beliefs of our members or whether they had any or not, or much as to their occupation. We are not backed by anybody who is digging up a lot of money, because we do not spend a lot of money.

The cost of preparing my statement and the statement of another witness was borne out of my pocket. I happen to have a fair salary myself, and I am willing to spend some of it in this direction.

Mr. Dolliver. When did you first become interested in the subject?

Mr. Palmer. When two ladies I mentioned came to me separately and said this question of fluoridation was bothering them. I knew them both. They did not know each other. "Can you suggest somebody who would be the nucleus of an organization," and I said to Mrs. Adams, "I wish you would get in touch with Mrs. Philadelphius," and to Mrs. Philadelphius, "I wish you would get in touch with Mrs. Adams," and they did.

Then they came to me and they said, "We feel that we should incorporate. Can you recommend a lawyer."

Well, I know of a young lawyer who is public spirited, and I said, "Why don't you go to Bob Wrighter, or I will phone him if you want me to."

As a result, there was a little gathering of 5 or 6 people; I was invited to attend, and I had nothing officially to do with it. The organization was formed, incorporated, and the first thing I knew, I landed on the board of directors. I do not know why but I am——

Mr. Dolliver. Is fluoride an element?

Mr. Palmer. Yes, it is one of the helogen gases, along with fluorine and several others. It is one that is extremely deadly, along with hydrocyanic gas.

Mr. Dolliver. Is it related to the chlorine family?

Mr. Palmer. It is related to the chlorine family, yes, of the helogen group; there are about seven of the helogens. I am not a chemist, but they are all of that family; they are all rather fatal in their reactions upon animal and vegetable life, and upon metal.

Mr. Dolliver. Well, chlorine is quite extensively used to purify water.

Mr. PALMER. Yes.

Mr. DOLLIVER. There are a great many cities use it including Washington?

Mr. PALMER. Surely; chlorine is very valuable for that purpose. Chlorine does not have corrosive properties.

Mr. DOLLIVER. I beg your pardon?

Mr. PALMER. Chlorine does not have corrosive properties, the corrosive properties that fluorine does. I have talked with doctors about this, about the constant ingestion of small amounts of fluorine, whether it might produce chronic conditions. The reason why fluorine is not suspected is the fact that in the settling process of city-purified water, most of the fluorine is evaporated—I mean, chlorine. Fluorine will not evaporate. Chlorine will evaporate, but fluorine will not evaporate.

When you cook your vegetables at home in water in which the fluorine may be so strong that you can smell it, or taste it, and when you come to cooking it, the process will drive off the chlorine—and I am getting the two terms confused. Fluorine will concentrate. I am going to get these words mixed up here if I am not careful.

Mr. DOLLIVER. Of course, there are many compounds of both of these elements, chlorine and fluorine; are there not?

Mr. PALMER. Yes; the principal compound of fluorine or the fluorides which are sold, in which the acid has mixed with metal. Fluorine has the property of uniting directly with most metals. It has a very, very strong affinity for calcium, according to the chemical experts. For that reason, the excess of fluorine that we may get from our food, or our drinking water may be stored up in the bones, causing arthritic conditions—but I would rather not try to discuss that, because I am not an expert.

Mr. DOLLIVER. We will have some other witnesses who are to cover that?

Mr. PALMER. The other witnesses will testify on that.

The CHAIRMAN. Thank you very much. Are there any further questions?

Mr. DEROUNIAN. Mr. Palmer, I was interested in that part of your statement, "When metal bursts into flame." Do you think that is a fair representation of the effect of fluorine on water?

Mr. PALMER. Not fluorine and water; no; one part to a million. I was giving there only the nature of the element itself; not the effect of long ingestion of one part per million.

Mr. DEROUNIAN. Is fluorine explosive?

Mr. PALMER. Fluorine is said to be the bad boy in the chemical world. It is the most unpredictable and difficult to handle of all of the elements known to science.

Mr. DEROUNIAN. Would you say that hydrogen is explosive?

Mr. PALMER. Well, hydrogen burns. It is explosive; it is explosive when it is in a container, when it is burnt in a restricted area.

Mr. DEROUNIAN. It is potentially a dangerous element; is that correct?

Mr. PALMER. Yes.

Mr. DEROUNIAN. Do you think we ought to stop drinking water?

Mr. PALMER. No; because we need hydrogen in our economy just as we need chlorine. We need chlorine, a certain quantity of it, to form hydrochloric acid; that is a part of the digestive juices of the

system. According to some scientists, one scientist whom we expect to be here—expected to be here—fluorine plays no part in the body metabolism, and it is not an element that is necessary in the development of the human organism, and it is there as an invader. We could not live very long without hydrogen; we can live without fluorine.

Mr. DEROUNIAN. Have you made any surveys of the effect of fluorine in the water in the District of Columbia on the health of the imbibers?

Mr. PALMER. No; it has not been established long enough.

Mr. DEROUNIAN. It has not been?

Mr. PALMER. No; it has only been in use about 2 years.

Mr. DEROUNIAN. And yet you think you can make a statement that it is harmful to the user?

Mr. PALMER. I say that scientists, certain scientists, have developed the fact that its long ingestion, its use with the experiments on animals, have created conditions, and they have cured them by taking the fluorine away and have reinstituted the condition by returning the animal to the fluorine diet. Those are questions, sir, that the scientists should answer, not a layman.

Mr. DEROUNIAN. Why do you think the Public Health Service of the United States is for fluorine?

Mr. PALMER. I do not think there is any question about that; we have seen their printed literature, their manual went out to promote fluoridation—and I was going to say how to put fluoridation over—their little booklet that answers, supposed-to-be answers, to the questions raised by the opponents. A pamphlet which was received in my office recently from the Public Dental Officers of the State of Pennsylvania, from Harrisburg, which had been at the instance of the United States Public Health Service and was distributed throughout the country. The fact that United States Public Health Service has caused these conferences of State dental officers, called them to Washington and, I believe, in some instances, have paid their expenses to indoctrinate them on the question of fluoridation and tell them how to promote it—and that is not a secret.

Mr. DEROUNIAN. Do you think that they would openly advocate anything that was detrimental to the health of the people of the United States?

Mr. PALMER. They might, sir. They advocated iodine at one time.

Mr. DEROUNIAN. Well, do you think it is a Communist plot?

Mr. PALMER. No, no, no; certainly not.

Mr. DEROUNIAN. Some people claim that?

Mr. PALMER. Some people would say that about anybody. No, I do not think there is any such Communist plot.

Mr. DEROUNIAN. Nothing further, Mr. Chairman.

The CHAIRMAN. Mr. Hale.

Mr. HALE. Mr. Palmer, is this national committee a local group or is it spread over the country?

Mr. PALMER. We have—most of our members are near Washington, but we have members as far away as California, Florida, and Alaska, and Maine and Massachusetts. Not many. We have not the facilties or the funds to go out and make a drive to get a lot of members. We should have 10,000 instead of 375, because I believe there are 10,000 people. It is just a little group, just as we are, with

a small amount of money, and we cannot go out and do the kind of work that a big Government agency can.

The CHAIRMAN. We thank you, Mr. Palmer, for your statement.

Mr. PALMER. Thank you, Mr. Chairman and gentlemen.

I understand that my full statement will appear in the record?

The CHAIRMAN. Yes. Without objection, the statement of Mr. Palmer will be inserted in the record.

(The statement referred to follows:)

THE MISCALCULATED RISK OF MASS FLUORIDATION—A STATEMENT BY CLAUDE N. PALMER, MEMBER OF THE BOARD OF DIRECTORS, IN SUPPORT OF H. R. 2341, PRESENTED ON BEHALF OF THE NATIONAL COMMITTEE AGAINST FLUORIDATION (FORMERLY CITIZENS COMMITTEE ON FLUORIDATION)

PART I

"May God grant me the wisdom to discover my own mistakes." With this prayer, the young scientist, Arrowsmith, began his career as a researcher into the causes and prevention of contagious disease. The National Committee Against Fluoridation, a nonprofit, nonsectarian group of American citizens, chartered under the laws of the District of Columbia, will endeavor to show by their own words how this creed of medical and research ethics is ignored by those who advocate most vociferously a regimen of mass medication by adding fluorine to community water supplies.

We lay no claim to being a group of scientists, though our membership, which extends from Maine to California and from Florida to Alaska, includes physicians, dentists, chemists, educators, and other professional men, as well as lay citizens from all levels of society. Since other witnesses will discuss fluoridation from a purely scientific viewpoint, in which some differing opinions may be expressed, this statement will deal mainly with certain contradictory assertions made by the proponents of fluoridation as to its possible benefits and potential dangers.

THE CHEMICAL PROPERTIES OF FLUORINE

On one subject, however, no disagreement will be expressed on either side of this issue. As every standard work on chemistry shows, no doubt exists as to the violent reaction of fluorine and its compounds on both animal and vegetable life. In support of this fact, we quote in part a statement of the International Nickel Co., published under the caption, "When Metal Bursts Into Flame."

"Imagine, if you can, an element so fierce it burns up steel. One that claws its way through firebrick * * * makes water burn like alcohol * * * destroys almost everything it touches. That's fluorine for you. And for over 200 years chemists racked their brains to find some material that would hold fluorine * * * for even a few minutes' study. Numerous materials * * * were tried. Most went up in a flash."

With these and other facts about the violent nature of fluorine and its compounds readily available, many people have become alarmed at the addition of this chemical to their drinking and cooking water, and are not convinced by statements from unknown sources, no matter how official, that taking this element into their systems for the rest of their lives, even though in minute doses, cannot possibly have a toxic effect upon their own and their children's future health.

These doubts and anxieties would not have been so widespread, nor would public resistance to and defeat of fluoridation have occurred in so many localities, both before and after its inception, were it not for the fact that this system of compulsory mass medication was in many instances introduced without the knowledge and consent of those who might be injured by it and often despite the protests of people who considered it an invasion of their personal rights and liberties.

THE POLICY OF FLUORIDATION BY STEALTH

That the advocates of fluoridation have adopted a deliberate policy of keeping the general public in ignorance on the subject—at least preventing a referendum vote in the community if possible—is shown by the record of proceedings at

the fourth annual conference of State dental directors and the Public Health Service in Washington, D. C., in June 1951. At this meeting Dr. F. A. Bull, director of dental education, Wisconsin State Board of Health, and evidently keynoter for the advocates of fluoridation, said in part as follows:

"If you can—I say if you can, because five times we have not been able to do it—keep fluoridation from going to a referendum. After you have just a little experience, you will find you can walk into a mayor's office and after about three sentences you will know whether he is for fluoridation or against it."

At another point in his address, referring to the toxicity of drinking water with a concentration of 1 part fluoride to 1 million parts of water, Dr. Bull is quoted in the official conference proceedings as saying:

"Now, in regard to toxicity, I note that Dr. Bain used the term 'adding sodium fluoride.' We never do that. That's rat poison. You add fluorides. Never mind that sodium fluoride business, because in most instances we are not adding sodium fluoride anyhow. All of those things give the opposition something to pick at, and they have enough to pick at without our giving them any more. But this toxicity question is a difficult one. I can't give you the answer on it. After all, you know fluoridated water isn't toxic. But when the other fellow says it is, it's difficult to answer him. I can prove that we don't know the answer to that one, because we had a city of 18,000 that was fluoridating the water for 6 or 8 months. A campaign was started by organized opposition on the ground of toxicity. It ended up in a referendum and they threw out fluoridation."

With such mixtures of professional candor and confusion reaching the ears of intelligent people, it is easy to understand why such communities as Los Angeles, Seattle, Minneapolis, Chicago, Kansas City, St. Louis, Philadelphia, Reading, New York, Rochester, Boston, Cambridge, Worcester, Cincinnati, Tampa, Lansing, Tallahassee, and some 300 other places rejected fluoridation either before it began or after it had been in operation, sometimes for a year or more.

THE FLUORIDATION PROPAGANDA LINE

Besides telling only what it wants the public to believe, carefully omitting any reference to the possibility of chronic fluorine poisoning, the proponents of fluoridation adroitly sidestep all mention of the rising flood of opposition that faces them in well-informed communities. The public hears only about new installations; never of rejections. We are asked to believe that many cities and towns eagerly await fluoridation; never that hundreds of communities have rejected it.

It is not strange that authentic data on the number of fluoridated areas are difficult to obtain, since profluoridation propaganda has used approximately the same figures—600 to 700—during the past several years. Fluoridation proponents have, however, recently made the satement that some 17 million American citizens are now drinking artificially fluoridated water. As the fluoridation program has been running in high gear for more than 10 years, this figure is not impressive, since it represents only about 10 percent of today's national population.

Compared with the rather poor showing on a nationwide basis, after nearly a decade of ceaseless propaganda and enthusiastic endorsement by medical and dental societies, public officials, chambers of commerce, and welfare groups, it is significent that the 17 cities previously noted, all of which have rejected outright or postponed fluoridation of their water supplies, represent a population of more than 20 million. It is thus apparent that these few cities in which fluoridation has been turned down outnumber by upward of 3 million persons the most optimistic claims of profluoridation enthusiasts.

We believe it safe to say that more resistance would have developed and more communities would have abandoned the idea of fluoridating their water systems if the public had been informed of what was going on, and if both sides of the issue had been discussed openly. That this was not the policy of those most interested in fluoridation is shown by the fact that many people are unaware that fluorides are being added to their drinking water, and do not know about the difference between fluorine and chlorine in their action upon animal organs and tissues.

In this connection, it is doubtful that all Members of Congress know whether or not the public water supplies in their own districts contain fluorine. A survey among adult citizens of Newburgh, N. Y., a community that has received more

profluoridation publicity perhaps than any other town, revealed that only 8 percent had any idea as to what "fluoridation" means, 72 percent said they did not know, the remaining 20 percent were undecided. Of the Newburgh group, only 22 percent were aware that fluorides were added to their drinking water, while 61 percent did not, but 83 percent said they believed they should have been consulted, and only 2 percent raised no objection.

DOES FLUORIDATION DO WHAT ITS BACKERS CLAIM FOR IT?

Other witnesses will discuss the therapeutic and physiological sides of this issue. It is my intention to point out the difficulty of obtaining authentic and unbiased data regarding the results of fluoridation in its job of reducing dental caries among children up to 8 years of age. While there is little doubt that fluoridated drinking water makes the teeth of young children somewhat more resistant to decay, there is much difference of opinion among dental authorities as to whether fluorine alone can be credited with producing the result. Some observers report that when fluoridation appears on the scene, certain other influences take a hand in the work, contributing a considerable share to its outcome.

Since data on all pilot experiments in this country are apt to be influenced by the experimenter's personal predilections, no matter how conscientious he happens to be, we take the experience of Canadian cities to show the error of giving full credit to fluoridation for reducing tooth decay among school children in one place, while equally good results were obtained in another without fluoridation.

Brantford, Ontario, adopted fluoridation in 1944. After 6 years its public health officer reported (February 1950) a reduction of 31 percent among children of school age requiring dental repairs. This report gave a sudden spurt to the campaign for public water fluoridation in Toronto. But health officials in Toronto had meanwhile been watching the condition of their school children's teeth. When the cry for fluoridation became insistent, they announced that dental decay among Toronto's children declined 45.3 percent during the same period of years.

The reason for Toronto's experience is simple. While Brantford was treating its children's teeth with fluorine, Toronto was plying its children with information on proper diet, exercise, and other aids to good health and teeth. This is an essential to every health program among school children, whether the community water supply is fluoridated, or whether it remains free of artificial medication. The Brantford-Toronto picture could be repeated many times over in this country.

HOW ACCURATELY IS THE FLUORINE PRESCRIPTION FILLED?

A favorite assertion of the professional and amateur fluoridators is that no harmful effect is possible from water containing "the prescribed concentration"—one part of fluorine to a million parts of water—other than a slight mottling or discoloration of the teeth. This formula completely overlooks the fact that some persons consume in the course of a day many times the amount of water consumed by others, that in summer most people drink much more than during cold weather, that persons afflicted with certain diseases need much more than the average needed by well persons, and that the susceptibility of one person to a given treatment differs widely from all others.

Prescribing the same pill to everyone, regardless of age, health, or ability to withstand its cumulative effect, and telling the patient to take as much or as little of the drug as he pleases, would hardly be considered acceptable procedure on the part of a practicing physician. Yet men who are not practicing physicians assume the prerogative of prescribing the same amount of fluorine to every person in every community on a lifelong basis, despite individual tolerance or needs.

The "safe" dosage of fluorine is presumed to be one part per million. That is the amount appearing most frequently in published literature on the subject. Yet we find an admitted authority on fluoridation, the same Dr. Bull previously mentioned herein as the official spokesman for the form of universal medication, telling his fellow dental directors—behind closed doors, of course—that not 1 part per milion, but 1.2 parts per million is the fluoride concentrate "we are recommending."

Granting that this prescription is the last word in fluorine therapy, can we be sure it is compounded accurately in every case and all circumstances? We have sound evidence that it is not. In Charlotte, N. C., for example, one of our larger fluoridated communities, monthly analyses of fluorine concentration at the city water plant between September 1949 and August 1950 showed variations from 14 percent above to 35 percent below the prescribed amount, an overall spread of 48 percent.

This 48 percent variation at the water plant might not be highly significant, if it were not for the fact that three other monthly tests of the same water drawn from the same source showed as great or greater variations in fluorine content, seldom agreeing with each other or with the water plant's analyses. Samples analyzed by the city health department showed a difference of 51 percent between maximum and minimum concentrations. The Charlotte water district tests showed variations of 53 percent during the 12-month period. Tests at a military post which draws its water from the Charlotte system showed a difference of 51 percent between maximum and minimum fluorine concentrations. While the latter percentage coincides with that of the city waterworks, it is significant that in no month of the 12 were all 4 tests in complete agreement as to the fluorine content of their individual samples.

If it were true, as promoters of fluoridation assert, that mixing and metering equipment used to combine fluorides with water are infallible, there would be only one reason why water enters the city mains with one concentration and leaves them a few miles away with a higher or lower concentration. This reason would be that part of the fluoride is deposited somewhere along the line. While there are indications that this is true to some extent, there is good evidence that certain amounts of fluoride remain in the mixing device, temporarily at least.

THE CORROSIVE ACTION OF FLUORINE ON PLANT EQUIPMENT

Evidence that even the most modern fluoride-mixing equipment in the hands of expert operators does not always compound the prescription accurately is given in a public statement by H. E. Wirth, assistant sanitary engineer of the State board of health, Madison, Wis. Mr. Wirth was quoted as follows in the transcript of a discussion on fluoridation at the University of Washington:

"Some operating difficulties have been noted, such as the clogging of solution piping by deposition of inert materials, the presence of foreign material consisting of pieces of heavy paper, slivers of wood, nails and staples, found in compounds described as 98 percent pure white sodium fluoride. There is (also) the more difficult problem of incrustation.

"This problem, common in hard waters, has been experienced in soft waters as well. When mixed with the water supply, sodium fluoride forms a precipitate with the calcium in the water, which plugs the injection lines, incrusts tanks and solution chambers.

"Even in soft-water makeup, precipitates form in the tanks, which, if not periodically removed, plugs the feeder. Control of this condition is secured by periodic back-washing of the tanks, which brings the sludge to the top, where it can be removed. Madison used cast iron for both tanks. Originally, attempt was made to feed into the well discharge lines. Severe erosion at the point of installations was everpresent, however, *requiring weekly replacement of the fittings.*" [Italic added.]

If sodium fluoride added to public drinking water by the most modern device, and superintended by a professional sanitary engineer, is as difficult to control as Mr. Wirth's statement admits, we submit that this procedure presents a serious health problem, especially when handled by unskilled persons, such as the village barber or hardware man. To show that this responsibility is sometimes given to untrained persons, we again quote from the remarks of Dr. Bull, previously referred to in this statement:

"So we took them to several little installations, where the village barber is the waterworks man, or the hardware man is the waterworks man. And we turned them over to him, and let the engineers question him, and find out what he is doing and how he is doing it. Now, in large cities, we do not concern ourselves, because they know how to handle the equipment and have trained help. But, in a small community, where the barber is going to operate the feeder, if anything goes wrong, he throws up his hands."

This revelation should make any reasonable person think twice before approving, let alone promoting, fluoridation in his own or any other community. It has

been shown that serious mechanical difficulties appear in large cities (Charlotte and Madison), and that the risk of more serious trouble can be expected in places where the responsibility is given to unskilled workers. Despite such hazards, it is understood that the Public Health Service has supplied fluorine-mixing devices to certain communities at the American taxpayer's expense.

Granting that the formula is correct and safe under all circumstances, it is unthinkable that the prescription should be filled by the village barber or hardware merchant. Prudence demands that such work be performed by registered pharmacists, not by handymen with part-time jobs in the local waterworks. Because of its dangerous nature, one may not buy hydrofluoric acid or other fluorides from a druggist. Yet these chemicals are now being administered in wholesale quantities to large groups of people by employees of municipal pumping stations all over the country under the qualified endorsement of the American Medical Association.

Much has been made by fluoridation advocates of this AMA endorsement. In its statement of some years ago to another congressional committee, the organization endorsed the program in principle only, said its councils "did not know of any injury" from drinking water with the recommended flourine content, did not believe such water to be toxic, and "purposely refrained" from suggesting or urging that any community fluoridate its public water supplies. This statement does not impress us as an unqualified endorsement of mass fluorine therapy.

HOW GOOD ARE THE PRECEDENTS FOR FLUORIDATION?

Proponents of fluoridation cite the practice of adding chlorine to community water systems as a precedent for adding fluorides. They also cite compulsory immunization against certain contagious diseases, now practiced in many localities, as analogous to fluoridation. These analogies are not sound, however, since dental caries is neither epidemic, contagious, infectious, nor fatal. At its worst, tooth decay is a minor health problem, the causes and prevention of which are not yet fully understood after many years experimentation and research.

There is, however, a single precedent in this field of therapy, though it is never mentioned publicly by the sponsors of fluoridation. We refer to an attempt of the United States Public Health Service and others a generation or more ago to promote the universal addition of iodine to public water supplies as a preventive of goiter. This early attempt to use city water mains as an avenue to mass medication failed for the simple reason that its backers learned in time that, rather than preventing or curing goiter, iodized drinking water tended to increase it.

When the facts become known about fluoridation, we believe this therapy will follow universal compulsory iodinization into the discard. Meanwhile, the public is being subjected to a regimen of treatment for a minor ailment affecting almost wholly a small part of the population, the long-range effects of which are as yet unknown. To determine whether any person will be injured by this treatment would require observation covering one or more generations. In these circumstances, it is difficult to understand why the program was launched throughout the Nation, after only 2 or 3 years of pilot tests among children under 9 years of age.

THE GOVERNMENT'S RESPONSIBILITY FOR FLUORIDATION

It has been intimated that Congress may be reluctant about enacting the Wier bill (H. R. 2341) on the ground that it might infringe the police powers reserved to individual State legislatures. This doctrine might be tenable, if the Federal Government were not already invading such police powers through its Public Health Service, which is one of the chief and most ardent promoters of mass fluoridation on a nationwide basis, supplying both fluoride-mixing equipment and printed publicity for which the Federal Treasury foots the bill.

Thus, the Congress is already responsible for any invasion of State or local police powers that might be involved in the passage of this legislation, since it appropriates the funds by which the Public Health Service is able to spread a web of profluoridation propaganda throughout the United States and even into foreign countries. Therefore, if the Wier bill is not acceptable to Congress, neither is the profluoridation program now in progress by another branch of Government—the United States Public Health Service.

In conclusion, we submit that the only alternative to enactment of this bill would be the elimination from future appropriations for the Public Health Service any funds that might be used in futhering the cause of mass fluoridation.

ADDENDUM TO A STATEMENT BY CLAUDE N. PALMER IN SUPPORT OF THE WIER BILL (H. R. 2341)

The data herein presented are submitted for inclusion in the record of these hearings because certain witnesses, who were expected to discuss them, are unable to be present. The foregoing statement refers briefly to a qualified endorsement of the American Medical Association regarding the use of fluorine salts in public water supplies as a therapy for reducing tooth decay in young children from birth to the age of 9 or until their permanent dentition has erupted.

This endorsement, it should be noted, adds that "fluoridation is essentially a matter for decision by the dental profession." By this qualification, the medical profession avoids responsibility for any harm resulting from this experiment in mass therapy, leaving it to the dental profession. As fluoridation is no more nor less than preventive medicine, and as it affects organs other than the teeth, we submit that it is ethically improper for dental groups to assume the authority for insisting that every person in a community shall be compelled to take a toxic chemical, which can benefit only a few young patients and may harm older ones.

We also submit that reports of marked reductions in tooth decay among school children in fluoridated cities are misleading, in that they rely upon a method of appraising dental conditions known as the DFM index. This index considers only the outward evidences of dental health, D for decayed teeth, F for teeth with fillings, and M for missing or extracted permanent teeth. Since this appraisal takes into account only surface indications, ignoring structural conditions within the tooth itself, and giving no thought to the child's internal organs, bones, endocrine glands, and nervous system, all of which are affected by fluorine, it is quite obvious that the DFM assay is both superficial and misleading.

FLUORINE

In contrast to the tendency to iodine deficiency, too much fluorine in the water supply is detrimental. Fluorine has been shown to be the cause of a disfiguring dental disease known as mottled enamel or fluorosis (1077). Fluorine interferes with the normal calcification of the teeth during the process of their

formation, so that affected teeth, in addition to being usually discolored and ugly in appearance, are structurally weak and deteriorate early in life. For this reason, it is especially important that fluorine be avoided during the period of tooth formation, that is, from birth to the age of 12 years.

Fortunately most of our large city water supplies do not contain toxic concentrations of fluorine, but there are sections in Arizona, California, Colorado, Florida, Idaho, Iowa, Kansas, Minnesota, Mississippi, Montana, Nebraska, New Mexico, North Dakota, South Dakota, Ohio, Oregon, Texas, Utah, Wisconsin, Wyoming, Africa, Canada, China, England, Italy, New Zealand, and South America in which all native-born inhabitants who have used the community water supply during the period of enamel formation have mottled teeth.

Quantitative knowledge of the human requirement for iodine and the human tolerance for fluorine has been handicapped by the minuteness of the amount involved in each case, which causes difficulty in analysis and measurement.

Correlation studies (1070) between the occurrence of mottled enamel and the fluorine concentration of the water consumed by afflicted persons show that this dental disease is always found when water containing even as little as 1 part per million of fluorine is used continuously during the period of formation of the permanent teeth. Severe mottling of the temporary teeth (1078) has been repeatedly observed when the fluorine concentration of the water is excessively high (6 to 16 parts per million). Water containing such high concentrations of fluorine cannot be safely used even for cooking.

The fluorine content of foodstuffs has been found to vary widely, but no evidence has been advanced so far to show that fluorine as combined naturally in foods is toxic. The fluorine problem therefore is chiefly concerned with the need for avoiding water containing fluorine in order to prevent the occurrence of mottled enamel. In many communities this is difficult, for all available water is contaminated with fluorine. In the past few years several methods of treatment of water for the removal of fluorine have been investigated, most of them proving unsatisfactory. The Arizona Agricultural Experiment Station has recently developed a method (1069) of fluorine removal by filtration, through the use of specially prepared ground bone, which has proved effective and practical for reducing the concentration of fluorine below the level that causes the dental disease. The method is based upon the previously mentioned fact that fluorine has a chemical affinity for the calcium of bone.

The use of fluorine compounds as spray insecticides (1079) for vegetables and fruits presents another problem. Tests on rats indicate that the compounds of fluorine studied were equal in toxicity and that cryolite, a fluorine compound commonly used as a spray insecticide, was just as effective as the more soluble fluorine compounds in producing mild mottled enamel. Government control of the use of these compounds is recommended as a means of prevention of fluorosis, although the question of exact tolerance level for fluorine spray residues on food materials merits further investigation.

[United States Dispensatory, 24th edition, 1943, pp. 1456–1457]

Fluorides

Absolute hydrogen fluoride is at temperatures below 19.4° a clear, volatile liquid, miscible with water. Commercial hydrofluoric acid usually contains about 46 to 50 percent of HF. Because of its solvent properties on glass, hydrofluoric acid is stored in lead, paraffin, or bakelite containers. Its vapors are extremely irritant and on contact with the skin cause serious ulcerations. If inhaled, they may cause edema of the glottis and death. In dilute solution, hydrofluoric acid acts, like other acids, as a local irritant, but is much more destructive to epithelium.

Hydrofluoric acid is used for cleaning metals but especially for etching glass. (Balance of paragraph describes this use.)

Fluorides, especially sodium fluoride, have had some experimental use in medicine, Goldenburg (Semana medica, 1932, 39, 1639) recommended sodium fluoride in the treatment of exophthalmic goiter; he used it either by mouth or intravenously. The salt has also been used in rheumatism and in epilepsy. The dose employed has been from 10 to 60 mg. (approximately one-sixth of 1 grain).

Fluorides are violent poison to all living tissues because of their precipitation of calcium. When introduced into the mammalian circulation, they cause fall of blood pressure, respiratory failure, and general paralysis. Continuous in-

gestion of nonfatal doses, according to Sollmann (J. Pharmacol, 1921, 17, 197), cause general cachexia and permanent inhibition of growth. It is well established that the condition characterized by mottled enamel of the teeth endemic in certain areas—notably the Mississippi Valley—is due to the presence of small amounts of fluorides in the drinking water. For methods of removing fluorides from drinking water, see Funk and Lindsay (Ind. Chem. Eng., 1936, 28, 947), Elvove (Pub Health Report, 1937, 52, 1308), and Dean (Pub. Health Report, 1939, 54, 862).

In lower animals, analogous changes occur in teeth and the bones become hard and fragile (Cristiana, compt. rend. soc. biol., 1927, 96, 843). On the other hand, it appears that complete absence of fluorides in drinking water, particularly during the first 10 years of life, may cause dental caries. Carefully controlled experiments in regulating the fluoride content of drinking water of several communities will, in the next few years, establish whether there is need for the element and, if so, the optimum concentration for it.

Sodium fluoride solutions, in concentrations ranging from 0.05 to 2.0 percent, have been applied topically in the treatment of teeth with seemingly good results. Until their value is established, however, the use of fluoride-containing dentifrices or internal medicaments is not justified. For an excellent review on this subject, authorized by the Council on Dental Therapeutics of the American Dental Association, see Jay (J. A. Ph. A., Prac. Ed., 1946, 7, 204).

TOXICOLOGY

In human cases of acute fluoride poisoning, the most common symptoms are epigastric pain, nausea, vomiting, diarrhea with frequent local paralysis either in the legs or face. Necropsy shows congested and edematous mucous membrane of the stomach and upper bowel, often with scattered hemorrhages. As the chief cause of death is the inactivation of the bodily calcium, the most important factor in the treatment is the free administration of lime salts; limewater by mouth will help by precipitating any fluoride which may be in the stomach and calcium chloride intravenously is useful to supply a systemic deficiency.

For records of human poisoning, see Sharkey and Simpson (J. A. M. A., 1933, 100, 97). As little as 0.25 gm. of sodium fluoride has caused dangerous symptoms. Many of the cases of human poisoning have occurred from ingestion of a fluoride roach poison in mistake for baking powder.

Under the name of ammonium bifluoride, a solution containing 20 percent of ammonium hydrogen fluoride and 10 percent of hydrofluoric acid has been used by Head (J. A. M. A., 1931, 61, 2233) in the treatment of pyorrhea alveolaris. This solution is actively germacidal, having a phenol coefficient of 5.82. Several fluorides—ammonium, potassium, and sodium—have found various nonmedical use as, for example, in insecticides, in cleaning compositions, as fluxes, and as mordants in dyeing.

Sodium silicofluoride, also known as sodium fluosilicate Na_2SiF_6, is a white granular powder soluble in 150 parts of water. Since the fluosilicates possess the toxic properties of the fluorides, this salt is largely used as an insect exterminator and rat poison.

FLUORINE

F. (19.00).—Fluorine, the most active member of the group of halogen elements, was discovered in 1771 by Scheele, who obtained it from fluorite, but it was not until 1886 that Moissan succeeded in separating it and studying its properties. It is a green gas with a specific gravity, compared with air, of 1.31. Fluorine can be liquefied below its critical temperature of −129°; the liquid boils, under atmospheric pressure, at −187°. The density of the liquid is 1.14. It is the most strongly negative element known, and hence is highly reactive. An account of fluorine produced by electrolysis if a mixture of anhydrous hydrofluoric acid and fused potassium bifluoride is presented by Porter (Chem. Met. Eng. 1946, July, 106).

The CHAIRMAN. The Chair would like to call attention again to the fact that we have a large number of witnesses, and if the time taken by the others is as long as those who have testified, we will not have an opportunity to hear so many today.

I would like to say that we have just so much time and to suggest that you might like to conserve the time so that as many as possible can testify.

Our next witness is Mr. Vincent A. Kleinfeld, attorney, of Washington, D. C.

STATEMENT OF VINCENT A. KLEINFELD, ATTORNEY, WASHINGTON, D. C.

Mr. KLEINFELD. Mr. Chairman, and members of the committee, my name is Vincent A. Kleinfeld. I live at 6203 30th Street NW., Washington, D. C.

Mr. Chairman and members of the committee, I wish to thank the committee for permitting me to testify in connection with H. R. 2341. I appear in behalf of the National Citizens Committee on Fluoridation, Washington, D. C., and the Florida Statewide Committee Against Fluoridation, which is an affiliated member of the Pure Water Association of America. These organizations are opposed to the fluoridation of the public water supply of this Nation.

First, I should like to set forth briefly my background. The only reason for doing this is that, unfortunately, in connection with this problem, as with respect to other problems, there is a growing tendency to call those who disagree with us by opprobious names, rather than to meet their arguments by better ones. In addition, there is no doubt that the fluoridation program does create sometimes hysteria on both sides of the fence. On one side you will find those opposing fluoridation talking about some fantastic Communist plot. Of course, that is nonsense.

On the other side, you will find the proponents of the program saying that fluoridation will not only reduce the incidence of dental decay in children but actually will improve the appearance of their teeth. And these very people, a number of years ago, by the use of photographs and statistics and figures, showed that in the cities where they had about 1 part of fluoride added to the drinking water, about 10 percent of the children were having what they called a very mild mottled, or spots on their teeth. They were in the back and sometimes in the front.

I am not saying that is very bad. I am saying that they claim that it was an improvement in the appearance of their teeth. So I will try here not to become hysterical about it. My main purpose in this testimony is to say that the advocates of fluoridation in the water supply of the entire Nation are proceeding in somewhat an unrealistic and certainly an indecent effort.

My background generally is this: I am a private lawyer, practicing law in this city. For approximately 10 years, I was head of the unit of the Department of Justice which handled litigation under the Federal Food, Drug and Cosmetic Act and similar regulatory statutes. I have written books in that field; I teach in the field and I have written fairly substantially in the field.

For approximately 3 years, I was chief counsel to the House of Representatives committee to investigate the use of chemicals in foods and cosmetics and it was that committee, 2 members of which were physicians, 1 of whom was a former State health officer, which held hearings on the fluoridation of public water and issued a report on the

subject, House Report 2500, 82d Congress, 2d session. This report concludes as follows, and I quote:

The Surgeon General of the United States Public Health Service testified before the committee as follows on the problems created by the ever-increasing utilization of chemicals in our food supply—

and I quote his statement:

"The contamination of air, water, food, and milk with chemicals and the resultant effect on health is of concern to the Public Health Service. The rapidity with which new compounds are being introduced in the production, processing, storage, packaging, and distribution of foods is alarming, particularly in view of the fact that the toxic effects of so many of these chemicals and the compounds which they form when introduced into the food are unknown. Because of the fact that many individuals in the United States are exposed each day to these potential hazards, the Public Health Service wholeheartedly endorses the study which the committee is undertaking."

I continue now with the quotation from the report of the committee:

In the opinion of your committee, the fluoridation of the public drinking water of a significant portion of the population of the Nation is an integral part of the problem adverted to by the Surgeon General. Water is consumed by every person in a community, regardless of his age, physical condition, or possible personal reactions. It is essential, therefore, that all the facts concerning fluoridation be disseminated, and an opportunity given to the people of each community to decide for themselves whether they desire to assume, at this time, the calculated risk inherent in the program.

The committee is of the view that a sufficient number of unanswered questions concerning the safety of this program exists as to warrant a conservative attitude. The committee believes that if communities are to make a mistake in reaching a decision on whether to fluoridate their public drinking water, it is preferable to err on the side of caution. This would seem to be particularly true since there are reasonable alternatives to fluoridating the public water supply, even if these alternatives are not quite as effective. The topical application of fluorides to the teeth of children may be more cumbersome, and perhaps more expensive than the simple addition of fluorine to drinking water. Nevertheless, it is a feasible program and one which will provide comparable protection for children's teeth for the period needed to acquire evidence beyond a reasonable doubt that no hazard exists to any portion of the population by reason of the addition of fluorides to drinking water.

The advisability of fluoridating the public water supply of the Nation is essentially a local problem, to be determined for itself by each community. Your committee is not recommending that Federal legislation be enacted in this field. The committee strongly urges, however, that research now under way be continued and expanded and that further studies, not limited to an examination of the vital statistics, be conducted to determine the long-range effects upon the aged and chronically ill of the ingestion of water containing inorganic fluorides.

The point may be raised at the outset as to the constitutional power of the Federal Government to prohibit agencies of the States and cities from fluoridating their drinking water supply if they so desire. I believe, personally, that point is well taken. If the Congress deems it advisable, however, it can undoubtedly provide that no agencies of the Federal Government, including the governments of the Territories and possessions of the United States, and of the District of Columbia, shall treat their public water supply with fluorides. Certainly, what the Congress does and what this committee does will have a most persuasive effect upon the States.

I believe also that the point may be well taken, that this committee cannot substitute its judgment on scientific questions for that held by medical and scientific authorities. I firmly believe, nevertheless, that this committee is well qualified to determine if there is a split of authority on whether the fluoridation program has been proven affirmatively to be entirely safe to all segments of the population, and to act accordingly within the authority vested in the Federal Government.

In this connection, it is highly significant that a substantial number of reputable scientists hold the view that not enough is yet known about the

cumulative and variable systemic effects of fluorides to warrant introducing them into our drinking water, which every person must necessarily consume, including the young and old, the sick and well, the undernourished or malnourished child, and those with allergies or idiosyncrasies. If this committee determines that a prima facie case is developed indicating that a problem may exist, the committee may wish to hold further and more extensive hearings—or may wish to say that, in its opinion, the Federal Government, in the District of Columbia or the Territories, in its opinion, is going too far, and that we should wait.

Certainly the problem is a most important one—no program of this magnitude has ever been instituted on a compulsory basis as far as I have been able to determine. The closest analogy is the program sponsored by the Public Health Service about 20 years ago to add an iodide to public water supplies to prevent goiter. I do not know why that program was abandoned. As the situation stands now, however, those who wish to consume an iodide may do so by using salt to which an iodide has been added. Those who do not wish to consume an iodide may purchase salt which is free from iodine. I suggest most respectfully that the committee give consideration to the hearings of the Select Committee of the House of Representatives to which I have adverted dealing with fluoridation, part 3, beginning on page 1483.

Another indication of what is attempted to be done by legislation by way of compulsion is a bill frequently introduced in the Congress to require all salt to be iodized. That has been defeated. Those who wish to use salt that is iodized can purchase it. Those who do not want to use it do not have to.

A little over 20 years ago it was discovered that in certain areas of the country the presence of natural fluorine in the drinking water caused a mottling of the teeth but reduced the incidence of dental decay in persons in these areas. The United States Public Health Service came to the conclusion that if limited amounts of a fluoride were added to the drinking water of communities whose water did not contain a natural fluoride, there would be little or no mottling and an approximate two-thirds decrease in the incidence of dental decay. The Public Health Service has issued an unqualified endorsement of the program and, in a booklet entitled "Better Health for 5 to 14 Cents a Year Through Fluoridated Water," and otherwise, is encouraging cities to adopt the program. There is no doubt that most of the major organizations of the country in the field of health and medicine are of the opinion that the addition to communal water supplies of fluorides, in the proportion of about one part per million, does not present a health hazard. It is also clear, however, that a minority view is held by a number of qualified scientists, who believe that the safety of this procedure has not been demonstrated beyond a reasonable doubt. It is their position that the proponents of fluoridation, most of whom have done no independent research, are proceeding far too rapidly in recommending that communities fluoridate their water supplies immediately.

I have set forth a few of the divided scientific opinions. For example, Dr. F. J. McLure, biochemist at the National Institute of Dental Research, Bethesda, Md., has said this:

> In view of the evidence we have accumulated and in consideration of the extensive studies of other authorities in this field, we do not regard the fluoridation of drinking water as a public health hazard.

On the other hand, Dr. V. O. Hurme, D. D. S., director of clinical research, Forsyth Dental Infirmary for Children, Boston, has said:

> As yet there is not enough scientific basis for recommending immediate acceptance of proposals to treat entire populations with fluorides.

Dr. R. S. Harris of the Massachusetts Institute of Technology, has said:

> * * * considerably more research on the toxicity of fluorine should be conducted before this interesting means for reducing tooth decay in man is extended.

There seems to be little dispute that children who, from birth to the age of 8, consume water containing approximately one part per million of a fluoride, will have fewer cavities than children drinking water containing no fluoride. The major problem which exists, however, is whether a sufficient amount of scientific investigation has been performed to warrant adding fluorides to the entire water supply of the Nation now.

It is the natural tendency of most people, and that of many of our great newspapers, to advocate most earnestly the fluoridation of our drinking water. I certainly do not blame them for, as I have indicated, most of our associations devoted to health have endorsed the program.

It is most important, however, to determine which approach to the problem of adding a fluoride to drinking water, or adding any chemical to any food substance, is taken. Most of the advocates of the program say, and this may well be true, that it has not been established that the addition of a fluoride to water has killed or injured anyone. Therefore, they declare, the program should be adopted since the incidence of dental decay in children will be reduced. Apparently that is the position held by the Public Health Service, based on that proposition and so-called epidemiological studies.

The other approach is that taken by the Food and Drug Administration, another Bureau of the Department of Health, Education, and Welfare, not to the fluoridation program, but to the overall problem of the addition of chemicals to the food supply of the Nation. The firm view of the Food and Drug Administration in connection with the addition of any chemical to any food is that it is up to the proponent of the utilization of a new chemical to demonstrate its safety beyond a reasonable doubt, and that is not up to the public or the Government to establish that it may present a hazard. That position is held by the Food and Drug Administration with respect to the addition of a chemical to any food even if, as distinguished from water, the public may choose to consume the food or to leave it alone. This approach is most important, for frequently there may be some suspicion of hazard caused by a chemical, although this cannot be proven either by a preponderance of the evidence or beyond a reasonable doubt.

It is the view of the Food and Drug Administration, nevertheless, that it is up to the proponents of the chemical to establish by comprehensive scientific data that the suspicion is unsound. This position was firmly set forth by the former Commissioner of the Food and Drug Administration as follows:

> I feel that no new chemical or no chemical that is subject to any question as to safety should be employed until its possible injurious effect, both on an acute and on a long-time chronic basis, has been shown to be nonexistent. In

other words, any chemical that is proposed for use ought to be proved in advance of distribution in a food product to be utterly and completely without the possibility of human injury.

The same general stand was taken by the council on foods and nutrition of the American Medical Association with respect to certain surface-active compounds which were being employed in bread and various other foods. The council said that:

> Unless the complete harmlessness of these agents can be demonstrated beyond a reasonable doubt, they should not, in the council's opinion, be employed in basic foods.

Subsequently, after protracted hearings, the Food and Drug Administration refused to permit the use of these substances in bakery products, notwithstanding that it had never been definitely established that the substances would cause harm to humans; and this decision was affirmed by the courts.

There is no dispute that fluorine is an extremely toxic element. But it is equally clear that tests of the character advocated by many scientists and organizations dealing with the public health with respect to the addition of chemicals to foods, have not been conducted on animals with water to which a fluoride has been added. It appears to be true that the kidneys of the ordinary person in good health will excrete almost all of the fluoride ingested through fluoridated water. However, exhaustive research does not appear to have been conducted dealing with the effect of fluorine if consumed by those—and there are many of them in this country—who have impaired kidneys. It has been reported that the fluoride content of placental tissue taken from women residing in an area which fluoridates its water was considerably higher than the fluoride content of placental tissue from women residing in an area whose water supply contains merely trace amounts of fluorine. It is not definitely known how much, if any, of the fluorine passes to the fetus, or whether or not it is harmful to the child.

The proponents of fluorine have admitted that they rely heavily upon epidemiological studies and analyses of the vital statistics of communities which have had a natural fluoride in their drinking water for many years to prove that inhabitants of such areas are not afflicted with any greater numbers of illnesses than persons from nonfluoride areas.

In an epidemiological study, all observations are related to the group and it is the group statistics which control. This type of study is contrasted with a clinical study, in which the observation remains related to the particular individual under study. There are many scientists who believe that epidemiological studies and analyses of vital statistics cannot be relied upon to conclude with certainty whether the physical condition of particular persons, such as those with kidney trouble, would or would not be worsened by fluoridated water.

It is important to realize that substances have been used for many years on the assumption that they were completely safe because it had not been established in advance that they were toxic, and yet it was subsequently determined that a hazard to health did in fact exist.

A few examples are pertinent to indicate the danger of relying upon vital statistics or upon studies which do not take into considera-

tion differing ages, idiosyncrasies and physical conditions. You may recall a salt substitute containing lithium chloride which was in use for some time. It had not been believed to be unsafe, and it was fairly widely used. It was subsequently discovered that to some few persons on a low salt diet, lithium chloride was extremely toxic, and salt substitutes containing lithium chloride were thereupon removed from the market.

Coumarin was used for 75 years as an ingredient of some imitation vanilla flavors and as a fixative and base for other synthetic food flavors. These flavors were consumed in ice cream, baked goods, and other products. Very recently, pharmaceutical studies revealed comprehensive evidence of the capacity of Coumarin to produce damage to the liver of experimental animals, and it is no longer used in food products.

Dulcin, a synthetic sweetening agent, was widely used for 50 years. No investigation of its possible adverse effects when consumed daily in small amounts over a long period of time was conducted until a few years ago, when the Food and Drug Administration studied the problem.

Previous toxicity studies had been content to show that no immediate ill effects were noted in either man or animals from quantities such as would be used for sweetening food. The Food and Drug Administration's study of the chronic toxicity of Dulcin extended over 2 years. It consisted of incorporating Dulcin into the diet of rats and observing the effects on growth and survival throughout their lifetime. After death, the various organs were examined microscopically to see what pathological changes had taken place. The data revealed that Dulcin was toxic, and it was removed from our food supply.

Within the last few years, it was discovered that certain cases of serious blood disorders and death were associated with the administration of the antibiotic chloromycetin. It was only after these deaths that it was determined that chloromycetin should not be used indiscriminately for minor ailments, and that when employed, periodic blood checks should be made.

It was discovered fairly recently, also, that a limited number of persons reacted most adversely to penicillin and terramycin, other of the wonder drugs. This does not mean, of course, that the use of these drugs should be discontinued. It means only that they should be used when really needed, and only under the most careful medical supervision.

Another example of the fact that long epidemiological studies do not necessarily establish freedom from hazard is found in the use of certain theretofore approved coal-tar dyes used in coloring foods. These dyes were employed for many years.

Only very recently studies by the Division of Pharmacology of the Food and Drug Administration revealed evidence of serious chronic toxicity in animals, and a hearing has been held by the agency which will presumably result in the outlawing of these colors from future use in our food supply.

In other words, gentlemen, "safety by assumption," based entirely on long usage or on studies of vital statistics, would by no means appear to be conclusive from a scientific viewpoint. The subtle, in-

sidious effects of a chemical, particularly a highly toxic substance such as fluorine, on a limited number of specific persons with various chronic disorders, particularly when consumed every day for many years, may not be readily recognized. In fact, as indicated, this may be the situation even where great precautions are taken and the substance is consumed under medical supervision.

I respectfully suggest that this be compared with the fact that every single person in the city of Washington, young or old, sick or well, without any regard to personal allergies or peculiar reactions, must necessarily consume a fluoride with every drop of water he drinks.

As stated, the epidemiological studies by the Public Health Service revealed no unusual incidence of chronic disease in the naturally fluoridated areas of the United States. To repeat, however, there is no definite knowledge as to the possible long-term effects, particularly on adults and children with kidney trouble, and on malnourished children. For example, an article in the February 1952 issue of the American Dental Association entitled "Relation of Endemic Dental Fluorosis to Malnutrition," had this to say:

> Importance of investigations of nutritional status: The data from this and other investigations suggest that malnourished infants and children, especially if deficient in calcium intake, may suffer from the effects of water containing fluorine while healthy children would remain unaffected. It is possible that the small proportion of individuals who show some, though slight, endemic dental fluorosis in communities with only about one part per million of fluorine in the water supply do so because of insufficient intake of calcium or because of disturbances in calcium metabolism.
>
> Thus low levels of fluoride ingestion which are generally considered to be safe for the general population may not be safe for malnourished infants and children. Therefore the nutritional status must be carefully assessed and guarded in areas with endemic fluorosis. Nutritional studies should be included in any comprehensive program of fluoridation of water, with special attention to chronically ailing infants and children.

One of the oldest and best known dental research institutions in this country is the Forsyth Dental Infirmary in Boston. Its clinical research director is Dr. Veikko Oscar Hurme. Dr. Hurme has pointed out that fluoridation is mass medication, undertaken without anything approaching adequate knowledge of the effect of fluorides, or the widely varying tolerances of young and old, sick and well.

The professor emeritus of biochemistry of the University of Wisconsin stated that—

> the toxic limit is a tremendously important matter and when we find communities ingesting a fluorine content such as indicated and nevertheless have gotten along well and apparently have had no recorded pathology, yet we wonder how well controlled was the examination and whether there is not something after all that did develop that we do not know anything about.

The director of the nutritional biochemistry laboratories of the department of food technology, Massachusetts Institute of Technology, has testified that the scientific literature does not establish that the continued ingestion of fluorine to the extent of one part per million in water is harmless; that that literature does not adequately answer many pertinent questions; and that in his opinion considerably more research on the toxicity of fluorine should be conducted before that method of reducing tooth decay is extended.

In order to test on a communitywide basis the effects of adding fluorides to water, a series of pilot programs were inaugurated. Not-

withstanding that these programs have not been concluded, encouragement is being given to hundreds of cities to act now rather than await the conclusion of the programs. Furthermore, and this is most important, no comprehensive study is apparently being made in these pilot programs of the effect of fluoridated drinking water on adults or the aged who may be suffering from impaired kidney function or other chronic diseases.

There are those who believe that there may be some hazard but who are frank in admitting that they are willing to take what they call a calculated risk.

The following statement of Dr. Francis C. Heyroth, representing the National Research Council ad hoc committee on fluoridation of water supplies, is pertinent in this connection:

Question. Is it not true, Doctor, that you can live without sugar, and I suppose, without sodium chloride or salt, but you have got to have water?

Dr. HEYROTH. That is right.

Question. So if a person in the District of Columbia is suffering from kidney trouble, I think your advice would be not to drink water.

Dr. HEYROTH. No, the advice would be to drink some water that comes from a mineral spring that is free from fluorides, which could be done. This man is very sick, you see, and that is a prescription for him.

Question. That is what he would have to do—he would have to get his water privately elsewhere?

Dr. HEYROTH. He would if it can be established that he is going to be sick for the rest of his life, which I doubt very much. He is either going to improve his kidney function and then that question is no longer pertinent, or else he is going to die, and then it is no longer pertinent.

Question. Doctor, in your report to the city of Cincinnati dated January 26, 1951, on page 8, you say this:

"About 1946, workers of the United States Public Health Service expressed the opinion that fluoridation should not be undertaken until epidemiological data comparable in reliability to those secured in regard to the incidence of caries and mottled enamel had been obtained on the health of old people who had lived for long periods in areas of known high and low fluoride concentrations in the drinking water. Unfortunately, such data have not been provided except to a very limited extent."

Is it not important that such data be provided?

Dr. HEYROTH. I think it is. I put it in this report for the purpose of stimulating that sort of work.

Question. But you did recommend fluoridation?

Dr. HEYROTH. Yes, I did recommend fluoridation.

You see, we have a calculated risk. Whenever one has to make any decision of this sort—shall we or shall we not put fluorides in water—we have to see what is the risk on both sides. If we put it in, I think the risk of doing any systemic damage to the aged and so on is very, very remote. If we leave it out, we know what the risk is in regard to the dental caries that we are not going to eliminate in children.

It is most interesting to note that Dr. Heyroth recommended that the city of Cincinnati fluoridates its water supply notwithstanding his own opinion that there were a number of health questions which had not been answered definitively. Obviously, Dr. Heyroth, and there are others, who are perfectly honestly willing to take this calculated risk because it seems to them to be a slight risk. But there are numerous others, both scientists and laymen, who do not believe that such a risk should be taken with literally millions of people of all ages and varying degrees of health. Particularly do these latter people feel that these risks should not be taken since there is no indication whatever that dental decay, disagreeable though it may be, causes serious

impairment to health or shortens life, or that one who suffers from dental decay may infest or injure his neighbors.

Similarly, there are others who are willing to take a "calculated risk" with the mottling of teeth frequently caused even by slight additions of a fluoride to drinking water. Thus, a representative of the Association of State and Territorial Health Officers stated that:

> If I had to choose between 10 percent of the community's children having mild mottling and 88 percent of them having extensive caries I would unhesitatingly choose the mottling. And I have no doubt that I speak for all the State health officers in making that choice. For that matter, as a father of two appearance-conscious teen-agers, I have no hesitation in making the same choice. Nor, they assure me, would they.

Certainly no one can quarrel with a personal decision of that character. The short answer, nevertheless, is that other parents may feel equally strongly that they would rather take the risk of a few caries in their children's teeth, than the hazard of even slight mottling of their teeth.

Gentlemen, this brings up another problem which is of fundamental importance, and that is the rights of an individual in a democracy such as ours. It is perhaps an old-fashioned notion that people, even if they are in a minority, have a right to be let alone. The adherents of this school of thought hold the view that our democratic tradition demands a respect for the privacy of the individual—a respect for the desire of the individual to be let alone even if he is in a minority and notwithstanding that most people may think he is wrong.

There are many thousands of people in this country who do not want either themselves or their parents or children to consume a fluoride every day of their lives. They believe that they can protect the teeth of their children in many other ways—by topical fluoridation which presents no danger and which has been strongly endorsed by the Public Health Service; by periodic vists to their dentists; by seeing to it that their children brush their teeth regularly and do not consume large quantities of sweets and carbonated beverages.

It is true that the rights of the individual sometimes have to be subjugated to the rights of the majority, particularly where there is danger to health and the possibility of hazard to others. Persons who are not vaccinated may contract smallpox, become disfigured, and die. In addition, and even more important, they may infect their neighbors. The impelling concept that the community health must be protected requires that the wishes of the individual, including even those of persons who may suffer some adverse reaction, be submerged and subordinated.

Even so, it is a physician who administers the medication and observes the patient. Fluoridated water, however, must be consumed by all of us, and without the interposition or supervision of our doctor or dentist. In addition, we will not infect the community if we do not drink fluoridated water. Those who wish to give their children a fluoride—and they are entitled to hold that opinion—can do so readily by the use of fluoride tablets. The wishes of those who do not desire their children to consume fluorides, and seek to rely on other methods of reducing dental decay, should be equally respected.

Another example is the chlorination of public drinking water. We must chlorinate our water to prevent disease and perhaps epidemics.

Here, again, the rights of the individual must give way to those of the community. In any event, it is interesting to note that chlorine may be removed, by those who so desire, by heating the water, and that chlorine, as distinguished from fluorine, has no physiological effects upon the body.

There is no doubt that the fluoridation program constitutes medication, and medication which all of us must accept. The therm "drug" is defined, in part, in section 201 (g) of the Federal Food, Drug, and Cosmetic Act, as articles intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease in man or other animals, and articles intended to affect the structure of any function of the body of man or other animals.

Medicine deals with the prevention, cure, and alleviation of disease. A reduction of the incidence of dental disease is the aim of fluoridation. It is safe to say that fluoridation is mass medication without parallel in the history of medicine. An analogy is vaccination, which is designed to prevent smallpox and not to treat persons who are afflicted with the disease.

I should like to conclude by quoting from the message of the President to the Congress in January of this year. This is what the President said, in part:

> Freedom, consent, and individual responsibility are fundamentals to our system in the field of medical care. This means that the traditional relationship of the physicians and his patient, and the right of the individual to select freely the manner of his care in illness, must be preserved.

I suggest, gentlemen, that the parents of this community and other communities should have the right to have their children treated with fluoridated water or otherwise as they so desire.

The CHAIRMAN. Are there any questions?

If not, we thank you, Mr. Kleinfeld, for your appearance. We realize that you have given a great deal of time in the preparation of the statement which you have made to the committee today, and we appreciate having the benefit of it in the consideration of this subject. We thank you.

Mr. KLEINFELD. Thank you, sir.

The CHAIRMAN. The committee will adjourn until 2 o'clock.

(Thereupon, at 12:30 p. m., a recess was taken until 2 p. m. of the same day.)

AFTERNOON SESSION

The CHAIRMAN. The committee will please come to order.

Congressman Philbin has called my attention to the fact that Miss Florence Birmingham, president of the Massachusetts Women's Political Club is in the room and that she has an engagement that requires her to leave early, and I will hear from Miss Birmingham at this time.

STATEMENT OF MISS FLORENCE BIRMINGHAM, PRESIDENT, MASSACHUSETTS WOMEN'S POLITICAL CLUB, BOSTON, MASS.

Miss BIRMINGHAM. Thank you very much, Mr. Chairman. I am the president of the Massachusetts Women's Political Club, a nonpartisan, nonsectarian organization, representing approximately 50,000 women in that State.

For a good many years we have been fighting against fluoridation in the public water supply and, therefore, I have come here to put this organization on record against fluoridation, and in favor of the principle contained in this bill H. R. 2341.

I should like to ask unanimous consent that my remarks be extended in the record.

The CHAIRMAN. You certainly will have that privilege. I have had handed to me your statement on behalf of the organization that you represent, and while I have not had the opportunity to read it in full, yet I can see you have given a great deal of attention to the study and we appreciate having the benefit of the views that you have expressed.

There have been several Members of Congress who have spoken to me with reference to your interest in the subject and I might say to you that when you come here with Congressmen like Philip J. Philbin, who is so outstanding, you are in good company.

Miss BIRMINGHAM. Thank you very much, Mr. Chairman. Congressman Philbin is an honorary member of our organization.

The CHAIRMAN. You are honored in having him represent you.

Miss BIRMINGHAM. Thank you very much. We feel that way.

(The statement of Miss Birmingham follows:)

STATEMENT BY MISS FLORENCE BIRMINGHAM, PRESIDENT, MASSACHUSETTS WOMEN'S POLITICAL CLUB

The Massachusetts Women's Political Club is a nonpartisan, nonsectarian organization, dedicated to teaching women the need for good government and educating them how best to use their political power and strength. It is over 30 years old. As its president, I am here to place our organization on record against fluoridation of water supplies and thus in favor of H. R. 2341.

For the past several years we have been engaged in fighting fluoridation as a threat to our liberty in that it is mass medication "without parallel in the history of medicine." The battle has been long and arduous as the Public Health Department, backed by generous funds allotted to it by the Congress, has pushed fluoridation with a savage ferocity.

When I was appointed trustee of Wrentham State School for Feebleminded Children, I learned there quite by accident that fluorine was used in the water supply. A trustee takes a solemn oath before the Governor and council. Therefore, I felt obligated to study this subject very carefully in order that the children might be protected. Many of them are State wards who have nobody else to look out for their interests.

I mentioned my fears to the board of trustees and told them that in our organization we had studied the Menace to Health of Fluorine published by the Univerity of New Mexico in 1938 and knew fluoridation was harmful. The trustees requested me to investigate and inform them of my findings. I studied both sides of the fluoridation issue. It took me a long time to fit the pieces together in the fluoridation scheme at the institution, for information was given most reluctantly.

Although the section of the law governing certain powers and duties of trustees states, "All trustees shall have free access to all books, records, and accounts pertaining to their respective State hospitals," I could learn nothing of the fluoridation experiment in progress there.

Dr. William D. Welcock, director, division of dental health, of the Massachusetts Department of Public Health, referred me to a special report, in reply to my query asking why, of all institutions, schools for the feebleminded children should be chosen. This report of 1945 mentioned Department of Mental Health Institutions. A subsequent report, he said, named Wrentham State School, the Belchertown State School, and the Fernald State School as selected studies for the fluoridation of water supplies in this State. However, this report like so many key documents was out of print, I was told.

In the fourth annual conference, State dental directors with the Public Health Service and the Children's Bureau held in the Federal Security Building, Washington, D. C., in June 1951, Dr. John W. Knutson, Chief of Dental Public Health,

stated frankly that the Public Health Service did not get around to approving water fluoridation until 5 years later. And yet they imposed this upon the little helpless wards of the State, not only in Massachusetts but in other parts of the Nation such as the State school in Southbury, Conn.

In that year studies were begun in selected areas throughout the country, all under the jurisdiction of the Federal Government.

Dr. Frank Bull, of Wisconsin, in the fourth annual conference explained "Incidentally, we never had any experiments in Wisconsin. To take a city of 100,000 and say, 'We are going to experiment on you, and if you survive we will learn something'—that is kind of rough treatment on the public. In Wisconsin, we set up demonstrations. They weren't experiments."

In Massachusetts, they were studies.

The trustees voted to halt fluoridation, but to my shocked surprise we were told by the department that it was not an experiment and the fluoridation continues on. And I still knew nothing specific about the setup at the school. However, I intensified my efforts to awaken the public to the threat to our liberty inherent in the program.

Natural water is a right the individual can expect from his municipality. In the use of that right no individual should be obliged to take a preventive medicine, especially when that medicine is a rat poison for which there is no known antidote.

Sodium fluoride is made from scrap aluminum. This former waste product is bringing in millions of dollars to the chemical companies and machinery manufacturers.

As an American citizen, I was frightened when I saw the "iron curtain" of secrecy surrounding every phase of the fluoridation scheme. All the more so when I found in the files a letter revealing that Dr. Wellock, of the Public Health Department, had come to the institution school and in a conference with administrative officials warned them there should be no publicity on the fluorine program there. In other words, I should not be enlightened.

We maintain that if this had been a bona fide ethical and true scientific arrangement, those who instigated fluoridation in the school would not have feared explaining it to the trustees who represent the public. The shroud of secrecy was terrifying to me, especially when it cloaked up an experiment upon feebleminded wards of the State who should have been treated with more scrupulous care, if anything, because of their pathetic condition. Many of these little children live out their lives in the institution and are buried in the graveyard on its grounds with none but the angels to weep for them.

Archbishop Richard J. Cushing, of Boston, has said that such little children were put into the world to make us kinder and more gentle, for they are close to the saints.

It was not until January 1953 that I learned about the experiment. It came through a book published by the Department of Public Health, called Commonwealth, given to me by a medical doctor who condemns fluoridation. Fluoridation was established in two schools of the feebleminded as a result of studies being carried on in various parts of the country. Wrentham and Belchertown State schools were fluoridated and became the pilot, but Fernald was maintained as the control station—no fluorides being added to the water there.

"Similar studies," said the senior sanitary engineer, "have been conducted on a citywide basis at Newburgh, N. Y. with the neighboring city of Kingston serving as a control. In Michigan, Grand Rapids undertook a similar study with Muskegon, the neighbor city, acting as the nonparticipating guide. Over a 6-year period a reduction of nearly 50 percent in tooth decay has already been noted among children of Grand Rapids and Newburgh.

Dr. Bull of Wisconsin told the dental officers from all over the Nation bluntly that the statistics gathered by the prefluoridation survey among elementary school—an essential step in mining a local propaganda field—are for the only purpose of building up the fluoridation program in any local area. To these dental health directors from all over the country he said, "Now why should we do a prefluoridation survey? Is it to find out if fluoridation works? No. We have told the public it works. So we cannot go back on that."

Moreover, in contradiction of the sanitary engineer's statement Grand Rapids was no longer paired off with Muskegon. On page 1500 of the hearings before the special congressional committee investigating fluoridation Dr. Bruce D. Forsyth said, "I believe this. We should continue to go back each year and study Grand Rapids population as we have been doing. We can even go back

to Muskegon although we have lost our control city there. They felt they wanted the water fluoridated and so it is being fluoridated, and so we have lost it as a control. But we certainly want to go back each year and do re-examination."

In such perfectly childish language Dr. Forsyth confessed the loss of the control, which it was convenient to lose, a blunder for which a scientist can never be forgiven.

The CIO Union, local number 396, at Wrentham State School, publicly protested fluoridation of water supplies and experimentation on human beings without their consent. The union president said: "We told the board of trustees and the superintendent that we strongly objected to being used as guinea pigs in this experiment which the administration at the institution now admits openly in the press was put into effect as an experiment. But they do nothing to stop it.

"We object to wild claims being made as to its benefits, so-called, at the institution; we object to the fact that it is not only a slow poison which can cause grave illness and death, but it is still being used no matter how we object. We protest to the lack of understanding of our concern and worry which has to our knowledge affected the health of employees mentally and physically.

"The method used in putting fluorine in the water at the State school is enough to cause panic at the institution among employees.

"Every employee at the school knows that the engineer has nothing to do with. A boy patient does it, and the electrician drives him to the watershed, or pumping station for the school, which is about 3 miles from the institution. This working patient is an assistant to the electrician, who is not an engineer.

"I had a long conversation with this working patient who goes to the water station almost every day. He knows what it is, for he said, 'Come up with me and I can show you how I can take care of you if I get mad at you. Your life is in my hands now.'

"There is no fence around the building or pumping station where they put in the fluorine. In fact, no fence for miles around. Anybody could poison the whole institution. There are no warning signs at all. Imagine what could happen if some of the boys escaped, and not knowing that this is rat poison, broke into the watershed and threw fluorine about."

Yet the administration stated publicly they were not consulted when the Department of Public Health decided to launch the experiment.

This statement brings us back again to the United States Public Health Department which has pushed this experiment by use of taxpayers' money without the consent of citizens who stand helpless before the combined power of the Federal Treasury, equipment concerns, and the chemical industry.

The special congressional committee of the Congress, in Report No. 2500, on fluoridation of public drinking water, advised communities to go slow on fluoridation, but did not recommend Federal legislation.

We deem such legislation necessary as the Public Health Department insolently shrugged off the recommendations of the committee, and through its centralized agencies has used its vast resources to place fluorine in the drinking water without even informing the citizens. This was done in Salem and Beverly in Massachusetts where fluorine was polluting the water months before they were aware of it.

The Public Health Department is flouting the food and drug laws. In Massachusetts Mr. Cyril C. Sullivan, former Chief Inspector of the Food and Drug Administration for New England, until his retirement from Federal service, detected a small amount of fluorides being added to beer and ale as a preservative; that is to stop afterfermentation in the bottle. The amount added was so small that it could scarcely be detected by chemical analysis of the product, being less than 0.5 part per million. The case came up for trial and the court and jury found defendants guilty. They held that the offense was of such a serious character that the defendant corporation of Springfield was fined $5,000, and the defendant personally was also fined $5,000 and in addition, a jail sentence of 6 months was imposed and suspended, and the defendant was placed on probation for a period of 3 years. (See *U. S.* v. *Commonwealth Brewing Co.*, D. C. Mass. 1945).

The same procedure should be followed in the case of fluorine in water supplies. Since the Food and Drug Administration is now winking at the violation of wholesale fluoridation, a legislation must be enacted to correct the situation. H. R. 2341 should be passed as an emergency measure.

If this mass experimentation upon human beings is not ended, then the complete dignity of man will be lost in the totalitarian mass medication fraud and the end will be wholesale adoption of euthanasia and death by the needle for the weakly and unwanted. Fluoridation is the opening wedge. The January issue of Red Book magazine quotes an anonymous "highly respectable" physician as confessing to putting people out of the way. "I think," he says, "that mercy killing undoubtedly goes on more frequently than many of us would believe * * * To some it is murder whatever the circumstances * * * And murder, we know, is wrong * * * Mercy killings will go on, whatever we try to do about it."

In London the needle is being talked about as a new method of execution. The issue is being raised, "Would doctors who agree to administer a death injection be breaking the Hippocratic oath which every doctor swears at the outset of his career?"

The oath declares, "I will give no deadly drug to any though it be asked of me nor will I counsel such * * *."

We may ask, "Does a doctor advocating addition of fluorine, a most powerful rat and roach poison for which there is no known antidote, to drinking water break the Oath of Hippocrates which he also has to take?" We believe he does.

The passage of this legislation would solve this problem and safeguard the citizens' liberty and health. We pray that this committee will act favorably upon H. R. 2341.

Re Chonological history of the fluoridation hoax or Operation Rat Poison in Three Installments.

To Members of the General Court:

It is time we were calling a spade a spade. The more research we do, the more corrupt this whole fluoridation scheme appears. Several public-spirited citizens have helped us compile and print three installments giving the entire history and purpose of the fluoridation hoax. The first installment enclosed is the longest and outlines the chronological history of it. The two shorter installments to follow will give substantiating proof of the facts as outlined in this installment.

These articles should serve to awaken our State legislature to the fact that this fluoridation problem is more important than new highways, new taxes, or new hospitals.

When all the insidious ramifications of this mass medication scheme are known to the public, its true significance will make the Teapot Dome scandal of 30 years ago appear picayune by comparison. The latter was an illicit profit for a few and its scandal is said to have killed only one—a President. Fluoridation is heavy commercial profit for a few but entails the destruction of human tissues, health, life, and the constitutional rights of millions.

If the legislature should fail in its duty to the public, it will necessitate the bringing of this whole sordid mess directly to the people in each local community affected.

Now, as never before, we need men and women like those of our colonial days who stood resolutely for that which was right even though it meant opposing the autocratic power of the crown.

Massachusetts Women's Political Club,
Florence Birmingham, *President.*

Part I. Fluoridation a Hoax or Operation Rat Poison

Fluoridation is a deceitful and illegal sales promotion of a deadly poison by a Government agency. It is more repugnant politically than "taxation without representation." It is more insidiously devastating than communism in Government. It is more destructive to our populous than crime or juvenile delinquency. It is slow creeping mass murder for a profit and it is as illegal as murder. It is a colossal fraud because it takes the public's money without giving in return any scientifically proven therapeutic value. All claims of benefit to children's teeth are based on unproven, misconstrued, misinterpreted, and superficial facts.

The writers hereof can and shall prove each and every statement above if the reader will read this and further installments.

The truth about fluoridation has been and still is being suppressed. How else have so many cities been able to pour this "rat poison" into the city water supply without the knowledge of the citizens who are forced to drink it? If

there is any doubt in your mind that sodium flouride, the substance they propose to put in our pure New England water is a poison, see the United States Dispensatory, the official medical compendium 24th edition, page 1465, available in your drugstore. It reads, "Fluorides are violent poisons to all living tissue because of their precipitation of calcium. They cause fall of blood pressure, respiratory failure, and general paralysis."

Why is it that you can question at random 100 people in any city now using fluoridated water and find none that know the truth about it, only a few that know they are drinking it, and those that did see a little notice in the paper had heard only that it was good for their kiddies' teeth?

How and why have they been able to dose the water supply of over 837 American communities serving 15,500,000 people with this rat and cockroach poison and yet have it brought to popular vote in only 60 communities? In 40 of these 60 communities where a semblance of publicity was forced by a few irate citizens, it was roundly defeated. In the other 20, only one side of the issue was given the unsuspecting public. How 15,500,000 intelligent Americans have become docile guinea pigs to a mass medical experiment with a deadly poison is unquestionably the colossal hoax of the century. Just how was this possible? It couldn't have been done 100 years ago when we had a Government of the people, by the people, and for the people.

It can and has happened here—and will continue its nefarious progress unless the public learns the truth. Lincoln said "if this Nation is ever destroyed it will be destroyed by enemies from within, not from without."

Yes, dear citizen, you are witnessing the price we pay by our apathetic attitude of "let George do it" or "what can I do, I'm only one little guy"? When the people lose interest, the overlords expand their power until eventually we become helpless vassals. It has already happened to 10 percent of our population, who have been sold a bill of goods with every effort made to keep the truth from them as we shall prove herein.

WHAT IS THIS FLUORIDATION CRAZE?

A high pressure sales campaign on the part of the United States Government agency to illegally impose mass medication of an unsuspecting and uninformed public, by using the prestige of a Government department to control press releases, influence dental associations, local health departments, and PTA's. That same agency has distributed, postage free, at taxpayers' expense, tons of propaganda blinding the taxpayer to the truth. Every high-pressure sales trick in the book has been used to get the equipment installed and the poison poured into the drinking water with a minimum of publicity and before those who take a sincere interest in their community could put up a roadblock. This mass medication has been done in violation of Federal laws, of State laws, and of our constitutional rights. It has been done under conditions of duress, without our knowledge or consent, and with no reasonable chance to escape. (See article on Legal Aspects of Fluoridation.) Furthermore, fluoridation aside from its legal aspects is a crime against the laws of God and man.

FACTS IN THE EVOLUTION OF OPERATION RAT POISON

The chronological history

First step.—Dr. George W. Heard, a dentist of Hereford, Tex., some 30 years ago announced that the soil in Deaf Smith County was so rich in minerals that there was hardly a toothache in the county. Twenty-three years later, other dentists investigated and came away with the erroneous conclusion that it might be due to the fluorine in the water, since its concentration seemed high.

As against this conclusion, Dr. Heard himself says:

"With this I do not concur. Fluorine in water is a deadly poison, inorganic, and cannot be properly assimilated by the human organism. It is purely an inorganic drug. Fluorine in soil and water is not a food, but plant life grown in this soil converts this mineral, which is a poison, into food values which prevent disease."

Taber's Cyclopedic Medical Dictionary bears out Dr. Heard's contention: "All such mineral elements must first be absorbed by plantlife and taken into the animal body as food before they can be assimilated."

Dr. Heard also states that in spite of the fluorine in the water which is the same today as 30 years ago, the percent of decay in the teeth in Hereford today

is 40 percent. This would certainly tend to indicate that it was not fluorine but our increased use of refined foods that is the real culprit behind decayed teeth. (Excerpts from report to City Council, San Bruno, Calif., which report helped to defeat fluoridation.)

Second step.—Sodium fluoride is a poisonous byproduct of the aluminum and the fertilizer industries. Like all companies efficient management strives for the profitable use of all byproducts. Up until recently the only commercial uses for sodium fluoride were as rat and cockroach poisons but these used only a small proportion of the output.

Its disposition created quite a problem. They were not permitted to dump it into rivers for it would poison the fishes and users downstream. When it was dumped into fields, the vegetation grown near it killed animals. What to do?

Apparently someone conceived the brilliant idea of taking advantage of the erroneous conclusions drawn from Deaf Smith County, Tex. The Aluminum Company of America then began selling sodium fluoride tablets to put in the drinking water to prevent dental caries in children 6 to 16 years. In their magazine ads they suggested that readers write them for full information about having the city fathers add fluorine to the city water supply. But this method must have proved too slow for the campaign was soon stepped up with a vengeance.

Third step.—In 1944 Oscar Ewing was put on the payroll of the Aluminum Company of America, as attorney, at an annual salary of $750,000. This fact was established at a Senate hearing and became a part of the Congressional Record. Since the Aluminum Co. had no big litigation pending at the time, the question might logically be asked, why such a large fee? A few months thereafter Mr. Ewing was made Federal Security Administrator with the announcement that he was taking a big salary cut in order to serve his country. As head of the Federal Security Agency (now the Department of Health, Education, and Welfare) he immediately started the ball rolling to sell "rat poison" by the ton instead of in dime packages. How?

By using the pressure of the Federal Government he induced the city fathers of Newburgh, N. Y., Grand Rapids, Mich., and Evanston, Ill., to try a 10-year experiment with fluoridation "to actually determine the effects of this 'rat poison' upon the dental caries of growing children." This was in 1945. The Nurenberg trials against Nazi criminals for experimenting on humans started in 1946.

Thus we see the paradox in which one Department of the Government is prosecuting 23 Nazis as arch criminals for illegally experimenting on human beings without their consent. In said trials the fact that humans were used as "experimental" guinea pigs outraged the conscience of the civilized world as being a crime against the fundamental laws of God and the inalienable rights of man. Some were hanged, others received long time sentences. But, at about this same time, we see another department of our Government deliberately committing the same illegal criminal act en masse against its own people in the name of "medical therapeutics."

Fourth step.—But was Mr. Ewing content to await the 10-year duration of the experiment? No—rat poison must be sold. Besides, the word "experiment" had by this time become distasteful. Possibly they figured that the best defense is offense, so to counteract this criminal charge of "mass experimentation" they put pressure everywhere to boost the sales of "rat poison" just as if it were a foregone conclusion that experimental work was not necessary. Nevertheless, it most certainly was an experiment and was so recognized in a letter by the United States Public Health Service and by the Delaney congressional committee investigating the fluoridation of public drinking water. But, like the Nazi experiments on human guinea pigs, it most certainly was not "scientific."

In reality it was a sales promotion scheme. More appropriately, it should be called an experiment of expediency to sell sodium fluoride (rat poison) under the utterly unsubstantiated guise of helping dental caries in the youngsters. At this point let us emphasize that "there is no true scientific evidence to show that children's teeth are actually benefited by sodium fluorine being dumped into the water, despite all the pseudo testimony given before the Delaney committee by the profluoridators, as we shall prove later. The claim of 50 percent reduction of dental caries positively cannot be scientifically substantiated.

Local health authorities, parent-teachers associations, local and national dental associations were all approached by the stooges of the master salesman, Ewing. In a letter to Michael Ambrose, Ewing insists that fluoridation "should be pushed

vigorously." Thus, with the backing of the United States Government, and millions of the taxpayers' money to spend on unsubstantiated and unscientific propaganda, such a sales promotion program would give even rat poison the flavor of bon-bons and the smell of Chanel No. 5. Is it any wonder that local city and town officials were swept off their feet and felt sure they could be doing no wrong by imposing this mass medication experiment on the unsuspecting and uninformed public. After all, wasn't the United States Government urging it? Let us digress to remind these local officials that the Nazi war criminals also thought they were doing no wrong. They pleaded that the orders came from "the highest possible German authority"—others pleaded pressure from above or that the experiments were for the ultimate benefit of der vaterland, or that they did it for the scientijfic advancement of all mankind. Nevertheless the judges and an enraged world opinion decided that the experiments were in no sense scientific but were in reality political expediency and that they violated the fundamental God-given rights of free individuals, that such rights could not be abrogated by anyone under any conditions. Result—the rope tightened about their necks. Once our people learn the real truth about Operation Rat Poison there might well be some necktie parties over here. Such predicaments develop only where men sacrifice principle for expediency.

Fifth step.—In 1952 it was hoped by thousands of thinking people that a change in the administration would put an end to this illegal mass medication experiment with rat poison. We should have known better. We should have known that once anyone joins an illegal racket you just don't quit at will. Things had gone too far. The public had been kept in the dark. The perpetrators of this poison scheme were safe. Rat poison sales had jumped. Dental associations, PTA's, and city fathers had been sucked in by innuendos, half truths, and unscientific statements. They had had too much faith in the utterly fallacious principle of the infallibility of Government. They believed what they were told solely because of who was telling them, and not because of factual scientific evidence.

So, regardless of what our hopes were when Mrs. Oveta Hobby took over the Federal Security Agency, and regardless of how good her intentions may have been, she too was caught in the whirlpool from which there was no escape. Overnight her agency became a full-fledged department known as Health, Education, and Welfare and she gained full Cabinet status. But what doomed the hopes of the antifluoridators was when they saw Mr. Nelson Rockefeller appointed as Mrs. Hobby's assistant with the title of Under Secretary. The Rockefellers own or control the aluminum trust, chemical fertilizers, and drug syndicates. They wield abject control over more authoritative medical research than any single group in the world through the instrument of the Rockefeller Foundation. Colleges and universities are beholden to it for millions in grants. If any experimenter to whom the Rockefeller Foundation has donated turns up evidence that helps sell Rockefeller chemicals, the chances are good that they will receive another grant. They control the news releases by controlling millions in advertising. Newspapers avoid bucking them for fear of financial advertising reprisals.

So Operation Rat Poison goes merrily on in high gear. For 5 years the United States Public Health Service, a division of this department had not been too enthusiastic about fluoridation and actually opposed it. But, overnight that has changed and now they give their blessing. Did they obtain long drawn-out experimental evidence overnight, or did they receive orders from above? Most certainly scientific evidence is not so quickly obtained. So, now with the United States Health Service openly pushing fluoridation Operation Rat Poison is making wonderful strides wherever the whole truth is not told to the public. Substantiating proof for above, to follow in next installment.

Re second installment of fluoridation hoax.

To the Members of the General Court:

As promised we offer herewith the second installment of operation rat poison. This one gives the substantiating scientific proof to the bold statement made in the first installment; namely, that the profluoridators have positively no conclusive scientific proof of their contention that the adding of sodium fluoride to the drinking water can in any way help the teeth of children.

The sources given herein are authentic and many are from unimpeachable scientific data made before the selfish sale of rat poison became a Government political football.

We give data from Funk and Wagnalls, the United States Department of Agriculture Yearbook 1939 (before Ewing), the University of Mexico and Arizona and doctors operating in that area where fluorine has been a problem for years; also statements of medical men made when the scientific truth was more important than poltical expediency.

Our legislators certainly realize that with political backing many sufficient psendotruths can be broadcast that will fool all who do not take the time to investigate. We are all victims of such propaganda as regards fluorine. We are not getting the scientific truth. As Senator Miller put it, he was convinced that one presumed authoritative source was simply repeating the other, with none having done any scientific work and each feeling safe because it had a Government agency's blessing—a modern version of "the king can do no wrong."

MASSACHUSETTS WOMEN'S POLITICAL CLUB,
FLORENCE BIRMINGHAM, *President.*

PART II. FLUORIDATION, A HOAX OR OPERATION RAT POISON

PROOF OF CLAIMS MADE IN PART I

A poison

Section 20703 of the Health and Safety Code of the State of California defines fluorides soluble in water as poison.

Section 20751 makes it unlawful to vend, sell, give away, or furnish either directly or indirectly any poison enumerated in section 20703 without a poison label.

The Massachusetts Legislature owes it to the people of Massachusetts to pass a law that will prohibit the poisoning and polluting of our water. The law should be made specific to counteract the propaganda of the United States Department of Health whose authority apparently changes the universal chemical action of God-made elements.

Here is some testimony before the Delaney House Investigating Committee:

"DR. MILLER: 'If you told people you put rat poison in water to cure (dental) caries it might raise several eyebrows.'

"DR. ALFRED TAYLOR, Ph. D.: 'After all it is a fact, that's about the only way that you can bring home the fact—I know of no other chemicals used in food or drink which is toxic enough to be used as a practical poison.'"

Dental aspects

The United States Department of Agriculture Yearbook 1939, Food and Life:

"Fluorine has been shown to be the cause of a disfiguring dental disease known as mottled enamel or fluorosis. Fluorine interferes with normal calcification of teeth during the process of their formation, so that teeth, in addition to being unusually discolored and ugly in appearance, are structurally weak and deteriorate early in life. For this reason it is especially important that fluorine be avoided * * *."

Funk & Wagnalls New Standard Dictionary gives the following definition:

"Fluorosis, a disease coming from the ingestion of too much fluorine, is a well-established toxicological entity, characterized by increased fragility of bones, due to their atrophy, and interestingly enough by enamel defects in teeth, exposing them to early decay."

Thus we see that fluorine produces the very opposite effect to that which fluorine added to drinking water is supposed to achieve. Chemical inorganic fluorine must not be confused with the fluorine that nature has organized into food. Chemical inorganic fluorine tends to harden the teeth to a point where they become very brittle and later crumble. This early unnatural hardening process has been misinterpreted by profluoridators as reducing tooth decay in children. Those dentists who are avidly encouraging fluoridation to help the kiddies teeth will find in years to come those same teeth will crumble under the grinding machine and they will be unable to do their usual excellent job.

Demarious C. Badger, M. D., pediatrician, of Hobbs, N. Mex., which is in a fluorine area, says:

"It is my opinion that if fluorine is in drinking water to the extent of seven-tenths parts per million that a fair majority of children will develop a defect in their permanent teeth, providing this water is ingested in the first 6 years of life. I have formed this opinion because I live in an endemic area of dental fluorosis where fluorine content is one part per million. I have gone over the

school children who have been born and raised here, and have found that about 35 percent of the children have a moderate defect in their permanent teeth."

This was a personal communication from Dr. Badger to Mrs. Golda Franzen, San Francisco, Calif. Dr. Badger continues:

"If the level of fluorine is above 0.7 part per million, then children under 3 years of age, and preferably under 6, should use filtered or distilled water in order to prevent a defect in their permanent teeth, which are forming during these years."

It should be noted that the proposed concentration of fluorides in our Massachusetts water is to be one part per million, or above the level set by Dr. Badger.

Dr. M. C. Smith and Prof. H. V. Smith, University of Arizona, Tucson, in Observations on Durability of Mottled Enamel:

"To one who is familiar with the disfiguring dental defect known as mottled enamel, which affects the teeth of every person who drinks water containing as little as one part per million of fluorine during the years of tooth formation, this recommendation seems, to put it mildly, unsafe.

"There is ample evidence that mottled teeth, though they be somewhat more resistant to the onset of decay, are structurally weak, and that unfortunately when decay does set in, the result is often disastrous. The chart graphically represents the result of a survey of the situation in St. David, Ariz. The survey includes the adult group so that a truer picture of the durability of mottled teeth could be obtained."

Dr. Max Ginns, senior consultant on the staff of Worcester (Mass.) City Hospital, a graduate of Tufts College Dental School and a practicing dentist since 1914, made some personal investigations. He was first an advocate of fluoridation. After visiting the fluorine areas he said:

"The enormous amount of tooth decay and crooked teeth so shocked me that I then began to question all of the propaganda about benefits of fluoridation. My disillusionment with the entire fluoridation program was complete when I learned that in these areas people were drinking Osarka (spring) water to avoid mottling and decay."—Boston Traveler, July 1, 1952.

Medical aspects

Qualified medical men and scientists make the following statement regarding fluorine:

"Increases fragility of bones."—Dr. Gutman, M. D.

"Disastrous effect upon goiter."—G. Steyn, South African Medical Journal, printed in New Bedford, Mass., Standard-Times, March 11, 1951.

"Hardening of the arteries; gastrointestinal disturbances; disorders of the respiratory system; disorders of the cardiac system."—Dr. McLester, M. D.

"Brittle bones."—Taber's Cyclopedic Medical Dictionary.

"Mottling and discoloration of teeth; pitting of enamel; spotty baldness in young men; decrease in clotting power of blood; anemia; interferes with transmissions of nerve impulses; affects metabolism of carbohydrates, fats, and proteins."—Dr. Jonathan Forman, B. A., M. D., F. A. C. A., head of Ohio State Medical Association.

"Lethal ingredient in rat poison."—C. R. Wells, American Dental Association.

"Increases sterility; decreases the birthrate."—Dr. J. Larner, M. D.

"Dr. Alfred Taylor, Ph. D., one of the leading research scientists of the Nation, found that fluoridated water in a concentration of one part per million did shorten the life span of mice destined to die of cancer. It did cause a consistent increase in death rate of hatching eggs. As a result of these findings, 26 Texas cities have held up plans for fluoridating."—Personal communication from Dr. Alfred Taylor to Mrs. Marion E. Lyon.

Dr. Leo Spira, M. D., Ph. D., who has spent 25 years of clinical investigations regarding fluorine poisoning and fluoridation of man and experimental research on animals, many of whose scientific reports have been printed in various publications writes:

"Fluorine is a highly toxic substance, and its deleterious effect consists of depriving the body of calcium stored in the body as a material indispensable for sustaining the vitality of most of the organic functions.

"You no doubt realize that even the 70–90 percent of fluorines are not eliminated without first doing damage to the body. This amount of fluorine has passed through the entire body, and has affected every tissue before it has eliminated, mainly through the kidneys. The 10–30 percent of fluorine retained exert a cumulative action on the body."

"It is true, these quantities (amounts used in fluoridation) are not sufficient to produce acute fluorine poisoning and kill the victim within hours of ingestion; but, owing to the cumulative nature of the poison, that is to say, owing to the fact that some of the poison ingested is retained in the body, a time will come when the tissues are irreparably damaged. This means a slow, gradual death.

"Grand Rapids, Mich., the only city which has had artificial fluoridation for more than 4 years, showed the following significant facts: Deaths from heart disease and its complications increased from 585 in 1944 as compared with 1,031 in 1949. The deaths from nephritis (kidney disease) and intracranial lesions both increased 50 percent in the 4-year period. The population increase, however, was only 7.8 percent. A new method of tabulating deaths was inaugurated in 1949, so that figures beyond that are not applicable."

Fluorine versus chlorine aspects

To the layman who might ask, "If they can put chlorine in the water, why can't they put fluorine?" Chlorine is put in the water as a police power to protect the public from contamination due to germs. Fluorine on the other hand is not put in to protect the public as a whole, but as a therapeutic agent in the hope that it will help dental caries in certain ages of children. Chlorine is used to treat the water—fluorine is used to treat the human being. Therefore fluorine is medication. Worse than that, it is mass medication, though admittedly it is only claimed to be beneficial to a small group of youngsters. Why poison the entire population when those who wish fluorine for dental purposes can use it in pill form for their water. Actually the painting of the teeth by your dentist with a compound of fluorine will do more good than the injection of fluorine into the body and this is not mass medication. It is not criminal and is not illegal.

Re Operation Rat Poison, Third Installment.

To the Members of the General Court:

This the third installment gives the bold truth about one of the most colossal sales frauds in history.

Read how, in a Government office of that department supposed to be dedicated to the protection of the health of the American people, a massive sales meeting was held to put over Operation, Rat Poison. The fuller minutes of this meeting, from which we quote a few excerpts gave not one single shred of scientific proof that adding fluorine is beneficial but it does emphatically state that the pro-fluoridators get the job done without public discussion; without letting it come to public vote and with giving the public one side only.

Read how they secretly admit they don't know the answers, but it enough of the right statements are made to enough of the right susceptible people by a Government authority anything can be put over.

Read how they violated the fundamental precepts of our Founding Fathers to the effect that education of the masses to their problems is the basis of all sound democratic government.

Read how they taught their fieldworkers: (1) not let the public know the truth; (2) avoid letting the people know that sodium fluoride is a poison; (3) that they don't know the answer to the toxicity questions; (4) that they should put it over on the dentists, and the PTA organizations before they can learn the real truth or organize resistance.

If ever in this country's history we need men of the caliber of John and Samuel Adams, John Hancock, Thomas Jefferson, and Abe Lincoln, it is now. As never before, we need statesmen who will stand for principles rather than politicians who think only of expediency. Massachusetts furnished the statesmen who sparked the movement that created our country. Will she again furnish the men who will act to show other States that statesmanship is not dead?

MASSACHUSETTS WOMEN'S POLITICAL CLUB,
FLORENCE BIRMINGHAM, *President.*

PART III. FLUORIDATION A HOAX OR OPERATION RAT POISON

SECRECY AND HALF TRUTHS AS PROPAGANDA

Lincoln said, "Give the people the truth and they will save the Nation."

This principle is the foundation of American democracy and the strength of our Nation but the extreme opposite was adopted by the Federal Security Agency under Oscar Ewing and unfortunately is continuing today. Mr. Ewing's propaganda expert was Edward L. Bernays. We quote from Dr. Paul Manning's arti-

cle: The Federal Engineering of Consent. Nephew of Sigmund Freud, Vienna-born Mr. Bernays is well documented in the Faxon book published in 1951 (Rumford Press, Concord, N. H.); Public Relations, Edward L. Bernays and the American Scene:

"The conscious and intelligent manipulation of the organized habits and opinions of the masses must be done by experts, the public relations counsels (Bernays invented the term); they are the invisible rulers who control the destinies of millions.

"* * * the most direct way to reach the mind of the herd is through its leaders. For, if the group leaders accept our ideas, the group they dominate will respond.

"In a talk to public-health-education leaders by Bernays, thought-control methods were introduced. 'A united leadership must eliminate lags by the engineering of consent. You, as a leader must get people to follow you. You must gain their consent to your health programs by gaining their support through many types of persuasion. But all this must be planned; indoctrination must be subtle. It should be worked into the everyday life of the people—24 hours a day in hundreds of ways. Public-health officers cannot afford the professional modesty professed by physicians.'

"A redefinition of ethics is necessary. * * * The subject matter of the propaganda need not necessarily be true, says Bernays."

COMMENT

The layman, the citizen, the PTA member, the doctor, the dentist, the city fathers of our towns, and members of the State legislature should reread the above for those are the words of a man who has been directing the fluoridation program. His words are diametrically opposed to that of Jefferson and Lincoln and of everything that maintains democracy. It is this philosophy that is today pouring rat poison into the bodies of 15 million American citizens.

Our public-spirited patriotic legislators should stop this "hoax" by specific legal action designating the word "fluorides." As long as the people are apathetic, what can you expect from a democracy but totalitarianism?

To demonstrate still further the lack of scientific knowledge, the use of high-pressure sales methods, and the desires to keep the public in the dark with regard to fluoridation, we quote excerpts from the fourth annual conference, State Dental Directors with the Public Health Service and the Children's Bureau, held June 6 to 8, 1951, in the Federal Security Building, Washington, D. C. Chairman: Dr. John W. Knutson, Chief, Division of Dental Public Health Relations and co-chairman Dr. John T. Fulton, Dental Service Adviser, United States Children's Bureau.

For the sake of brevity we quote only a sentence here and there:

Dr. Knutson: "As you all know, the Public Health Service did not get around to approving water fluoridation until 5 years later (1950). You all know that Dr. Frank Bull has appeared before us, and also dental groups during the past 5 years, asking the simple question, 'What are we waiting for? Why don't we go ahead and fluoridate water supplies?'"

Dr. Bull, who was salesman deluxe for rat poison in Wisconsin, "What are some of the objections?"

"The first: Isn't fluoride the thing that caused mottled enamel? Now we tell them this, that at one part per million dental fluorosis bring about the most beautiful teeth that anyone ever had. And we show them pictures of such teeth. We don't try to say that there is no such thing as fluorosis even at 1.2 per million which we are recommending, but you have got to have an answer. Maybe you have a better one."

Author's comment: The reader should please note that in this high-pressure sales meeting the recognized sales head, Dr. Bull, never gave his underlings the answer to any of the public's questions nor any scientific evidence to substantiate the benefits of fluoridation.

Dr. Bull: "And, incidentally, we never use the term 'artificial fluoridation.' There is something about that term that means a phony. We call it 'controlled fluoridation.' Incidently, we never had any 'experiments' in Wisconsin. To take a city of 100,000 and say, 'We are going to experiment on you, and if you survive we will learn something from it,' that is kind of rough treatment on the public. In Wisconsin we set up demonstrations—they weren't experiments."

Dr. Bull: "Now, in regard to toxicity, I notice that Dr. Bane used the term 'adding sodium fluoride.' We never do that. That is rat poison. You add

fluorides. Never mind that sodium-fluoride business. All of these things give the opposition something to pick at and they have got enough to pick out without giving them more. But this toxicity question is a difficult one. I can't give you the answer on it. I can prove to you that we do not know the answer to that one, because we had a city of 18,000 people which was fluoridating its water for 6 to 8 months. Then a campaign was started by an organized opposition on the ground of toxicity. It ended up in a referendum and they threw out fluorine."

Dr. Bull: "I don't believe you can win approval of any public health program where there is organized opposition. I mean, clever, well-thought-up opposition. So, when you get the answer on the question of toxicity please write me at once, because I would like to know."

Dr. Bull again: "One thing that is a little hard to handle is the charge that flouridation is not needed. They talk of other methods and when they get through adding up all the percentages of decay that we can reduce by such methods, we end up in a minus. When they take us at our word, they make awful liars out of us—the research workers."

Author's comment: Thus we see that the arch salesman who put over fluoridation in most of Wisconsin had no facts or figures. He did not know any answers, but did know how to put over high-pressure salesmanship providing the public was kept in the dark. Poor Abe Lincoln must have groaned in his grave when this was said in a Government propaganda meeting in a Government office.

Dr. Bull again: "People are going to say, 'Isn't it a fact that you don't know all about fluoridation? Do you know how this thing works?' We say, we don't know all about anything."

Dr. Bull: "You have got to get a policy that says, 'do it' * * * What kind of public health program is it if you say to the community, 'If you want to do it'."

Dr. Bull: "When we are having the press in, and the public in, don't have anybody on the program who is going to go ahead and oppose us because he wants to study it some more."

Dr. Bull: "Now, where dentists do not seem interested, do not let them stymie you—what we do on occasion like this is to arrange for the PTA or some group to ask for some of us to come in and talk about fluoridation. In this way you get in without forcing yourself, and you can build a fire under the dentist. This is promotional work."

Dr. Bull: "You have got to knock their objections down. The question of toxicity is on the same order. Lay off it all together, just pass it over."

Dr. Bull: "Let me tell you that the PTA is a honey when it comes to fluoridation. Give them all you've got."

Dr. Bull: "If you can, I say if you can, because 5 times we have not been able to do it, keep fluoridation from going to a referendum—at the same time, do not tell the people that you are just starting on the fluoridation program in order to promote something else because you are never going to promote anything that comes up to fluoridation in an urban community."

Dr. Glover Jones, Texas, interrupts Dr. Bull with: "We have some 30 or 40 cities discussing fluoridation. Various ones had procured equipment and were thinking and talking about it. The University of Texas had a research program on some white mice. There was a rumor that fluoridation of water supplies caused cancer; that has knocked the pins from under us."

Dr. Bull: "I wish I knew the answer. I do not know why they didn't include a letter from two-thirds of the deans of dental schools of the University saying that fluoridation is a rat poison and should not be used. You know how we handle it on this 'rat poison' business. We said it was unfortunate it didn't kill every rat. What do we care what happens to rats? You know these research people, they can't get over the feeling that you have to have test tubes before you start applying it to human beings."

Dr. Bull: "These fellows (research people) can just take the statements of the ADA, or the USDHS, or the deans of dental schools on research workers and they can prove to you that we are absolutely crazy for thinking about fluoridation."

Comment: Thus it can be seen that there is nothing scientific, nothing sincere, no desire to tell the public the truth, no desire to let the public in on it, and every effort is made in a high-pressure sales campaign to prevent the people from knowing anything except their one-sided propaganda.

As against all this high pressure, unscientific sales promotional campaign put on by the Government agency, let us contrast the statement made by Representative James J. Delaney, who with 6 other Congressmen including 2 medical men, heard the scientists from both sides during congressional hearings March and February 1952. This committee reports:

"It is essential, therefore, that all the facts concerning fluoridation be disseminated, and an opportunity be given to the people of each community to decide for themselves whether they desire to assume at this time, the calculated risk inherent in the program. The committee believes that if communities are to make a mistake in reaching a decision on whether to fluoridate their public drinking water, it is preferable to err on the side of caution."

You have already been told of Congressman A. L. Miller's testimony before Congress to the effect that he too was duped and overawed by the force of authorities arrayed in favor of fluoridation. He came out for fluoridation at first until he started to investigate. Congressman Miller was big enough to admit he had been duped. Most certainly, every high pressure sales promotion scheme has been used in Massachusetts by the promoters of Massachusetts medication and human experimentation. The paramount question now is: Have we today enough statesmen of integrity with a sincere devotion to their public trust to withstand this autocratic and undemocratic Government agency? Have we enough men who can and will think for themselves instead of listening to those in authority simply because they are in high Government places? Have we on Boston's Capitol Hill today Tories who will kowtow subserviently to Government agencies whether right or wrong or have we patriots as of old who place principle and the dignity of man above expediency; and if necessary, above constituted legal authority?

STATEMENT OF JAMES WATT, MANAGER, WASHINGTON OFFICE OF THE CHRISTIAN SCIENCE COMMITTEE ON PUBLICATION

The CHAIRMAN. Our next witness will be James Watt, manager of the Washington office of the Christian Science committee on publications.

You may proceed, Mr. Watt.

Mr. WATT. My name is James Watt. I am manager of the Washington office of the Christian Science committee on publication—part of the administrative offices of the Christian Science denomination.

I am appearing before this committee today as the official representative of the Christian Science denomination, consisting of the First Church of Christ, Scientist, in Boston, Mass., and its more than 3,000 branch churches. Also, I speak as an individual citizen and as a member of the Christian Science Church.

The Christian Science Church and Christian Scientists individually protest the compulsory medication, involved in the treatment of public water supplies with fluorides. We welcome the opportunity to appear in support of H. R. 2341, and it is our hope that the bill will be favorably considered by the Congress.

In an opinion rendered recently in a Louisiana trial court in the case of *Mark E. Chapman et al* v. *City of Shreveport*, which case is now on appeal, we find this statement concerning fluoridation:

> * * * medication, in lay understanding, in condes prophylaxis or preventive measures, when applied to the individual. * * * Considering the end results that are sought, we cannot escape the conclusion that it is a form of medication, or at least a scientific treatment or a sort of hydrotherapy, by way of ingesting these mineralized waters, of and for the children of the community under 12 years of age.

And further on in his opinion, the trial judge said:

> No person or segment of the population having that condition (dental caries or tooth decay) can on that account have any adverse effect on the health, dental or otherwise, of the general public or of any segment thereof. We repeat, in our opinion this is not a matter of the public health. It is strictly within the realm of individual and personal dental health and hygiene, within which each person should be free to choose his course for himself and those for whom he is responsible in the family relation. To this field, the just powers of the Government do not extend.

This opinion makes it clear to us that the fluoridation program, as related to public water supplies, is in effect a step toward state medicine. We are as opposed to state medicine as we would be opposed to a state church, and for the same reason.

The constitutional right of the free exercise of religion was made the very first pronouncement in the Bill of Rights by the Congress of the United States. The first article of this famous instrument reads in part:

> Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof * * *

For Christian Scientists, at least, this freedom to practice their religion is being challenged and overrun by the tendency to extend to medical theories and practices priority over rights of religion. These practices threaten to undermine one of our beloved country's oldest and most sacred covenants.

The purposes behind compulsory medication of citizens may appear worthy. It masquerades as a necessity and a benefit, but actually represents a form of benevolent despotism which we had hoped for forefathers swept away a century and a half ago. Therefore, to force this method of dental hygiene upon Christian Scientists constitutes a violation of fundamental religious rights.

The Christian Scientists do not oppose any voluntary system of medicine or surgery or health regimen. They do not desire to impose their way of thought or healing upon anybody; but they do believe in voluntary acceptance or rejection of political, religious, or medical beliefs. It should be stated also that Christian Scientists enter no objection against measures of sanitation and public cleanliness. Christian Scientists simply ask that they be permitted to enjoy the same freedom which, as American citizens supporting the American way of life, they are trying to sustain for others.

Healing the sick through prayer as Jesus did, and directed His followers to do, is a fundamental practice of this Christianly scientific religion. Christian Scientists know that the right of religious freedom is a constitutional right—a right which the majority of people wish to see preserved. They also know that although their method of treating the sick by prayer runs contrary to the prevailing systems of today, it is an integral part of their religion, and, therefore, a constitutional right. For them it is the most effective known method for the prevention and treatment of disease, as well as an inseparable aspect of their worship.

They note with alarm the spread of compulsory medical examination and treatment by institutional and government fiat. There is a tendency to force healing effort into a single mold, rather than to rally all the health potentialities of our country and to encourage them to the highest voluntary effort.

We do not believe that it is the sense and desire of the electorate, the legislatures, or the courts of our land to sacrifice religious liberty in favor of any system of health improvement or control.

In presenting this argument for exemption from compulsory medical treatment (fluoridation being treatment before the fact—the disease) Christian Scientists are not challenging the police power of the state; they are challenging the administration of that power

insofar as it tramples on religious rights. They are challenging it on moral grounds—on the moral grounds that forcing medical treatment on persons when it is contrary to their deepest religious convictions and practices is a violation of the spirit, if not the letter, of the first amendment to the Constitution of the United States.

An editorial entitled "Unconscious Tyranny" which appeared in the Christian Science Monitor of June 11, 1951, states the case succinctly and reads as follows:

> In considering proposals that public water supplies be treated with fluorides to reduce decay of children's teeth, all that some authorities would require is that local dental and medical societies and health officials approve. So far as we know, only the American Water Works Association has added that there must be a "strong public demand" for such treatment.
>
> This tendency to pass over the people and let the experts decide is all too frequent these days in matters pertaining to health. It is an attitude of "the government knows best" that, while well intentioned, dilutes self-reliant self-government. Moreover, paternalism involves an unconscious tyranny over individuals.
>
> Dental health is a private affair, and there are many who prefer to keep the freedom to decide for themselves how to deal with it. This they cannot do if public water is medicated as recommended, for then they must either submit to the fluoride treatment or go thirsty.
>
> Chlorination and fluoridation are not in the same category. The former is designed to prevent pollution of public water. The latter is an imposition of treatment that does not relieve a public danger and does deprive individuals of the choice of rejecting it in favor of another form of treatment. Such an intrusion on individual freedom is not to be entered into lightly. In effect, this is state medicine with the government forcing its concept of dental hygiene upon everyone in the community. Certainly, no group of experts, however well qualified they may be technically, is really competent to decide such an issue, especially when, as in the case with fluoridation, they cannot even agree among themselves that what is recommended is safe or effective.
>
> A fundamental freedom is involved here. The right of individuals who depend on prayer rather than drugs to maintain health is infringed by blanket medication. This basic religious freedom is precious and cannot be conveniently ignored every time a new cure-all is suggested. Certainly it is within the scope of technical possibility as well as conscience to provide medication for those who want it without forcing it upon everyone. Certainly such a course is more in accord with democratic ideas and constitutional practices.

Let it be known that Christian Scientists are vitally concerned with health and with the public interest. No bona fide Christian Scientist endangers a community by his actions or his religious beliefs. Christian Scientists are good citizens; they observe law and order; they report communicable diseases promptly and strictly observe quarantine regulations. They contribute much to the health and well-being of their communities.

Our particular desire in this instance is to point out that a fundamental freedom is endangered here under the guise of benevolent public welfare.

We urge that individual freedom be preserved and recommend the passage of H. R. 2341.

The CHAIRMAN. Thank you very much. Any questions?

Mr. HESELTON. Mr. Watt, do you have the citation to the case you refer to?

Mr. WATT. Yes; it is in the statement.

Mr. HESELTON. Do you have the volume and page number?

Mr. WATT. No; I do not.

Mr. HESELTON. Is that a district court?

Mr. WATT. It is a trial court at Shreveport, La.

Mr. HESELTON. A State court?

Mr. WATT. I do not know which court.

Mr. HESELTON. In your presentation you placed emphasis upon the first article of the Constitution and referred to the Bill of Rights. I wondered if, in connection with any fluoridation program that has been undertaken, has there been a challenge as to it being unconstitutional because of that first article?

Mr. WATT. When the question first came up here in Washington, I came to the Appropriations Committee, both the House and the Senate, and pointed that out, and you will find a short statement from me on the record. I think it was about the only one that did come at that time. I happened to have talked with Senator Hill about it at various times. At various places it has come up and Christian Scientists have joined with others in presenting this point of view. We make only one point on it.

Mr. HESELTON. What I had in mind was this: Has any effort been made to establish the constitutionality in the court?

Mr. WATT. I do not know.

Mr. HESELTON. You do not know what the facts are as to who Mr. Mark E. Chapman is or the ground of the alleged violation?

Mr. WATT. I do not know, and the reason I used his statement was to have the opinion of a judge, and it was a trial, and evidence was submitted, and to have the opinion of the—that it was a form of medication, because that was one of the controversial points. Some people say that it is not medication and some say it is.

Mr. HESELTON. I understand that.

Mr. WATT. That was my only reason for using the quotation.

Mr. HESELTON. I understand that it has been some 20 years, during which the program has been instituted in various States, communities, and counties, and I was wondering if the Christian Scientists had attempted to establish the unconstitutionality in the courts on the ground that it was a violation of the first article of the Bill of Rights.

Mr. WATT. The Christian Science Church as such, certainly has not. If there has been anything like that, it would have been by an individual, who might have been a Christian Scientists, but I do not know.

Mr. HESELTON. That is all.

Mr. WATT. Someone has handed me the opinion here.

The CHAIRMAN. Do you desire to make it a part of your remarks?

Mr. WATT. I could give it to Mr. Heselton.

Mr. HESELTON. I should like to see it.

The CHAIRMAN. Do you care to interrogate the witness further, Mr. Heselton?

Mr. HESELTON. I think not, Mr. Chairman.

Mr. PRIEST. Will the gentleman yield?

Mr. HESELTON. Yes.

Mr. PRIEST. Do you know whether this relates to the question before us?

Mr. HESELTON. I will be very glad to indicate that.

It is the opinion of the presiding judge of the First District Court of Caddo Parish, La., and it is an action by Mark E. Chapman and others against the city of Shreveport and they sought a preliminary writ of injunction to prevent the fluoridation of the publically owned

and operated city waterworks, and I take it from what Mr. Watt has said that the injunction was issued. And judgment was entered accordingly.

(The opinion above referred to has been placed in the committee files.)

The CHAIRMAN. Are there any further questions? If not, we thank you, Mr. Watt, for your appearance and your statement.

Mr. WATT. Thank you, Mr. Chairman.

The CHAIRMAN. I notice from the list of witnesses that has been handed to me that some have come a great distance: 1 from Toledo, 1 from Springfield, Mass., and 1 from San Francisco, 1 from Worcester, another from Hartford and 1 from Seattle, Wash., and some from Boston.

I would like to give recognition to those who have come great distances first.

The next one on my list is Dr. Frederick B. Exner, fellow of the American College of Radiology.

Mr. PELLY. Mr. Chairman, Dr. Exner is a constituent of mine and comes very highly recommended by a great many well known people in my Congressional District. I noticed this morning that one of the witnesses referred to the University of Washington and I believe Dr. Exner has had some connection with the University of Washington, and as my colleagues will recognize, it is always a pleasure when we have a witness from our own district.

I thought perhaps you might permit me at this time just to say a few words in welcoming Dr. Exner as a witness before he begins his statement.

Dr. EXNER. Thank you, Mr. Pelly and Mr. Chairman.

The CHAIRMAN. I realize, Mr. Pelly, that you would have a great deal of pleasure in having Dr. Exner here as a witness today, especially in view of the fact that he has a background that entitles you to be proud of his achievements. We certainly are happy to have you here, Dr. Exner, from the district that is so ably represented by Mr. Pelly, and you will carry back to Seattle, if you will, that we have no more faithful or able member of this committee than Mr. Pelly who comes from the city of Seattle.

Dr. EXNER. Mr. Chairman, I shall be very happy to do so and I wish to state that I am personally very proud of Mr. Pelly's work.

The CHAIRMAN. You may proceed, Dr. Exner.

STATEMENT OF DR. FREDERICK B. EXNER, FELLOW OF THE AMERICAN COLLEGE OF RADIOLOGY, UNIVERSITY OF WASHINGTON

Dr. EXNER. I have attempted to brief my testimony to save the committee's time. I hope I have not mangled it in the process but you will find all of it in the statement.

The CHAIRMAN. I notice, in your statement, you say that you have briefed it.

Dr. EXNER. Yes.

The CHAIRMAN. Do you mean that it has taken 40 pages to brief it?

Dr. EXNER. No, sir. I mean, I am about to brief it now; I am about to brief the 40 pages, I hope.

The CHAIRMAN. You may proceed.

Dr. EXNER. I am Frederick B. Exner, doctor of medicine, fellow of the American College of Radiology. I am something of a "jack-of-all-trades." My father was professor of chemistry at Carleton College, Northfield, Minn., for many years, and I practically grew up in the chemistry laboratory. I was graduated from Carleton College, bachelor of arts, 1921, with two majors, mathematics and chemistry. I took postgraduate work there in organic chemistry in the summer of 1923. I taught chemistry and physics at Faribault, Minn., from 1921 to 1923.

I taught physics and chemistry for 2 years in high school and while in medical school, I took an extra summer quarter, and took elective work in pathology and physical chemistry; and also did some special work on statistical studies of growth with Richard Scammon, one of the pioneers in "biometrics."

From 1930 to 1933, I took postgraduate work combined with teaching in radiology and pathology, at the University of Minnesota. Since that time I have engaged in the private practice of radiology, including dental X-ray, mostly in Seattle.

While at Minnesota, I did pioneer work on mass-X-ray case finding of tuberculosis. My latest paper on the subject was published in July 1952. I was twice president of the local Antituberculosis League (Christmas seals), was for more than 10 years a consultant to the State department of health, and have been on the medical advisory committee of the State department of vocational rehabilitation. I include these facts because it has been maliciously stated that I am opposed to everything aimed toward the public good.

I am a physician in good standing.

I am a member of the house of delegates of Washington State Medical Association and have been 4 times president of the State Radiological Society, 6 times secretary of the Association of American Physicians and Surgeons, am counselor for Washington for the American College of Radiology, and a member of its commission on legislation and public policy. I am a member of the faculty of our medical school, medical ethics and economics.

I speak here strictly as an individual, expressing my own opinions. The medical school, particularly, wants it expressly understood that it has no official opinions on the subject of fluoridation.

The following testimony is based on more than 2 years of intensive study.

The CHAIRMAN. With the reputation you have, Dr. Exner, and the background of your study and experience, I can very readily understand why Mr. Pelly took great pride in presenting you here today, and took occasion to refer to the fact that you were one of the outstanding physicians.

Dr. EXNER. Thank you.

There is nothing controversial about facts. Controversies arise over matters of opinion. I hope, therefore, to keep my testimony as factual as possible.

Facts are stubborn things. When you defy them you get in trouble. The dark ages were dark because instead of seeking facts, people permitted themselves to be bound by official opinions, mostly handed down from Aristotle. We can consider that science was

born when Galileo dropped two balls from the Tower of Pisa, and established that facts take precedence over authority. We can foresee the death of science in Russia, where it must conform to the party line, and where they already have an official theory of heredity.

Most of us are not aware of a similar danger here. Yet in this matter of fluoridation we come dangerously close to "official science." We don't ask: "Is this thing true?" "Does it make sense?" "Does it conform to common knowledge?" Instead, we ask "What does Dean say?" "What does Arnold say?" "What does McClure say?" Or "What does the A. D. A. or the A. M. A., the A. W. W. A., the National Research Council, or the Public Health Service say?" And we fail to notice that when any of these organizations speaks on the subject, it is merely Dean, Arnold, or McClure in a different hat.

Dean, Arnold and McClure have done much work on fluorides, mottled enamel, and tooth-decay; but instead of examining their methods, or looking at their data, we merely ask: "What do they say?" Let's look at what they say.

F. J. McClure of the Public Health Service was asked by the council on foods and nutrition of the A. M. A. to write the section of fluorine for the second edition of its Handbook of Nutrition (Lewis, London, 1951). His article was also published without references in the A. M. A. March 12, 1949 (pp. 711–713). The later actions of the A. M. A. were largely influenced by what it says, and even more by what it fails to say.

On page 148 of the Handbook, and page 714, Journal of American Medical Association, McClure makes this statement: "Fluorine ingestion from domestic waters, even in areas of greatest fluorine concentration, would rarely exceed 8 to 10 milograms daily."

Disregarding Bauxite, Ark., where Churchill of Aluminum Research Laboratories reported 13.7 parts per million of fluoride in water no longer used, we may assume that McClure meant water with 8 to 10 parts per million.

Even so, we find that McClure, Mitchell and others experimented on conscientious objectors during the war (Journal of Industrial Hygiene and Toxicology, June 1945, pp. 159–170). We find (p. 163) when they were kept in a hot, humid room, with only casual activity, and permitted to drink Galesburg water, with 1.9 parts per million of fluoride, they got, on the average, 9.7 and up to 12.2 milligrams fluoride per day. On the basis of 10 parts per million this corresponds to 51 milligrams per day, a far cry from the 10 milligrams in the handbook.

Even under comfortable conditions the same men averaged 5.4 milligrams per day, corresponding to 28 milligrams at 10 parts per million.

Given Urbana water, with 0.3 part per million of fluoride, the averages (p. 164) were 1.8 milligrams and 0.6 milligram corresponding to 60 milligrams and 20 milligrams respectively at 10 parts per million. It seems that McClure was singularly unimpressed with his own findings when he wrote the material on which we all rely for accurate information.

Meanwhile the same Handbook states (p. 475) that—

the volume of sweat may reach 2.5 liters (each about a quart) an hour in men at hard work at a high environmental temperature.

This would, if my figures are correct, amount to an extra 16 or more liters per 8-hour day of needed fluid. Even at the recommended 1.0 parts per million this would amount to a total of about 6.5 milligrams per day, and provide a significant additional hazard to men working where they are exposed to fluoride.

Let's look again. In 1944, at Cleveland, McClure told the American Association for the Advancement of Science that—

> children up to age 12 years, also exposed to drinking water containing 1.0 parts per million fluorine, will ingest via food and drinking water about 0.8 to 1.1 milligrams fluorine daily, equal to about 0.05 milligram fluorine per kilogram body-weight.

If true, and even assuming that they all get 0.3 milligram or less in their food, then every child up to 12 years old must drink 1⅔ pints of water per day and weigh 44 pounds. I don't believe it. Yet statements based on these figures of McClure's are quoted all over the place as "scientifically proved fact."

Let's look again. In the same handbook (p. 145), McClure says:

> In an attempt to assess the hazard of cumulative fluorosis from fluoride waters, an extensive survey of the fluorine concentration of urine specimens of high school boys and of young selectees * * * was made by McClure and Kinser.

The reference is to Public Health Report 59: 1575, 1944.

This tells how pooled specimens from 15 to 20 or less persons each were analyzed and found, within a wide range, to have about the same concentration of fluoride as the local water. From this he concludes (Handbook p. 146) that—

> upward of 90 percent of water-borne fluorine in concentrations of 0.5 to 4.5 parts per million is eliminated in the daily urine of teen-age boys and young men.

The conclusion of course is a gross non sequitur and the whole thing a tissue of fallacies. One of the more obvious is that he totally disregards water loss through the skin and from the lungs. You can see the latter on a cold day.

In an article by Machle, Scott, and Largent which McClure likes to quote (Journal of Industrial Hygiene and Toxicology, 24: 199, September 1942), there is an account of 9 months water-balance study on one individual. It showed that the daily urine output was just half the daily fluid consumption, and about a third of the daily water from all sources. That excludes water from foods as well as other sources. Actually, then if McClure proved anything he proved that less than half the daily fluorine intake is put out in the urine. Nevertheless his false conclusion is accepted as "scientific fact" and used as a basis for further conclusions.

Now, with regard to Dr. Arnold, we will have more to say about fluoride storage, but first let's look at what Dean and Arnold say, Arnold confines himself largely to quoting the work of others. However, in the Journal of American Dental Association, January 1948, page 30, he quotes an article of which he is coauthor. He says:

> In Aurora, Ill. * * * only about 0.4 percent of the anterior teeth showed even so much as the mildest form of fluorosis.

There is some doubt as to what he meant by "anterior teeth." If he means the 8 incisors, the 633 children had 5,064 anterior teeth. If he meant the upper central incisors, which are the ones most commonly affected, they had 1,266. Four-tenths percent of the first figure is 20

teeth. Four-tenths percent of the second figure is 5 teeth. The original article (Public Health Report, April 11, 1941, p. 790), however, tells us that 57 incisor teeth were affected. This may have been an honest error, but it appeared in the most widely read, by far, dental journal. It has never been corrected, and influenced the thinking of many dentists. Also, it is often quoted.

Now, with regard to Dr. Dean, what does Dean say? As a matter of fact, he has said so much he has been given honors and medals. He is quoted all over the world. He quotes himself extensively, in 1 case from 11 previous articles. But what he quotes is mostly his opinions and conclusions. This gives them far more weight than if he merely stated them. He rarely quotes his actual findings.

So that we may know what we are talking about, and with your permission, Mr. Chairman, I would like to show you at this point some pictures taken from Dr. Dean's writings. This was originated, as far as I can tell, in a book primarily on dental health. The same publication was put out by the American Association for the Advancement of Science and was headed by a committee of which Dr. Dean was a member.

This picture on the left is the one under consideration. I hope you can see it. It gives a picture of normal teeth, of questionable mottling, and of fluorosis, of very mild mottling, and severe.

Now, in some earlier works, Dr. Dean used artists' drawings instead of photographs. In photographs it is so difficult to distinguish between the highlights and white flecks that Dean himself wrote on some of the pictures that he has published.

These are photographs and it is very difficult to tell, but on the artists' drawings, made under Dean's supervision, you can find that on the questionable range, there are a lot of low white spots shown by the artists on the front teeth. And if you read the description which goes with the pictures, you will find that the teeth are described as definitely abnormal.

With regard to very mild classification, looking here, you do not see very much unless you are told what to look at and then you are not quite sure what it means.

You will find in 1934, Dr. Dean published a classification of mottled enamel, in which he stated that the characteristic brown stains, the Colorado brown stains, the Texas stain, that caused this condition, that there is a disfiguring quality, disfiguring even when it is only white, but more so when it is brown.

But in 1934 Dr. Dean said that brown stain does not occur in the very mild classification. The article written the following year, he had learned better, because at that time he said that it rarely occurred and if it does occur, it is—I do not remember the exact wording—but it is very limited, almost such as to be impercentible.

In 1935 the wording was repeated and in 1938, so there is no possibility of our getting confused on having found an earlier article published in 1935 of a later article published in 1934. However, that is a matter that is covered in detail in the written testimony.

I merely wanted to show you something of what you are looking at on the mild type as it is very definitely shown on this illustration the brown stains, that there is a lot of brown stain in the mottled division, and that we do not have picked categories where you go through and

separate the squares from the triangles, but that this is a continuous gradation, and somewhere between here and here is a borderline, between the mild and the mottled, and that perhaps even if there is reason for wanting to find more mild and more moderate, you might find it—some of it has slipped over this way, or vice versa, because those types of things happen in any scientific investigation and lead to the general rule that where you have an interest in the investigation you are conducting, that the results are sure to be modified by bias, even with the most scientific intention.

Dean has said so much it is hard to know where to start. For example, in Public Health Reports, April 11, 1941, page 762, he says:

> It is obvious that whatever effect the waters with relatively high fluoride content (over 2 parts per million of Fahrenheit) have on dental caries is largely of academic interest: the resultant permanent disfigurement of many of the users far outweighs any advantage that might accrue from the standpoint of partial control of dental caries.

But in Pelton and Wisan's Dentistry in Public Health (Saunders, Philadelphia, 1949) page 145, Dean says:

> The question is frequently raised why certain children have no mottled enamel, while others in the same family using the same water supply have it. * * * a number of factors may be kept in mind: Normal biologic variability, natural differences in sensitivity (or resistance), amount of water drunk, amount of milk consumed, dietary and culinary habits, and doubtless other unrecognizable variables influencing fluoride intake.

It is common knowledge that children habitally consume widely different amounts of fluids. It is also common knowledge that in one case a child may be nursed, and later drink nothing but milk and juices, eat canned soups, and canned or steamed vegetables; while another may be fed milk powder dissolved in water, and later drink nothing but water, eat home-made soups and boiled vegetables. It is clear that one may easily get 10 times as much fluoride as the other, and that any statement that 1 part per million is safe and 2 parts excessive; or that one-half part is safe and 1 part excessive, is just plain silly. The 2 to 1 differences are insignificant alongside the individual differences. Yet such is the basic postulate on which the case for fluoridation stands or falls.

In Public Health Reports, December 6, 1935, Dean says:

> For public health purposes we have arbitrarily denied the minimal threshold of fluoride concentration in a domestic water supply as the highest concentration incapable of producing a definite degree of mottled enamel in as much as 10 percent of the group examined.

In a footnote, he explains:

> A community is given a "negative" mottled enamel index when "less than 10 percent of the children show 'very mild' or more severe types of mottled enamel."

On the basis of his work, the Public Health Service, in 1942, adopted 1 part per million as the maximum permissible amount of fluoride in public water supplies. It was considered that more than that amount caused so much damage that it must be removed, or a different source of water found.

Yet in 1952 he testified under oath (Delaney hearings, pp. 1647–1653) that from 1 part per million of fluoride in the water (*a*) there would result no "objectionable" fluorosis from a public health stand-

point, or in other words, that less than 15 percent of children would get "very mild" or more severe degrees of mottled enamel: (*b*) no child would get personally objectionable fluorosis, and that anything that attracts attention is objectionable; (*c*) that there would be no brown stain or dull white opacity; (*d*) that any teeth classified as "mild" (as distinguished from "very mild") would invariably be second bicuspids or molars (back teeth which are not seen); and (*e*) that in teeth showing "questionable" mottling the changes are "so very slight you don't even know what it is."

These things simply are not true. I have personally seen teeth that developed in Denver, using water with one part per million of fluoride, that were stained. The front teeth were mottled with brown, and it was obvious at first glance from across the room.

In Tristan da Cunha, where the water contains 0.2 part per million of fluoride, R. Soggnaes (Journal of Dental Research, August 1941, pp. 303–322) found that 30 percent of persons between 6 and 19 had mottled teeth; that 60 percent of the upper central incisors were affected; that they showed "white spots in the enamel" described as opaque areas of a whitish color; that "the lesions were obvious enough to be revealed at the first smile of many of the younger inhabitants"; that even deciduous teeth were affected; and that the diagnosis was confirmed by chemical analysis of the teeth.

A study by the Public Health Service in 1951 (Public Health Service Reports, 68, p. 504, No. 5, May 1953), found 18 percent of children affected where there was only 0.8 part per million fluoride. What is more, 2 percent were classified as "moderate," and 1 percent as "severe." (On the basis of this study, it has been recommended that the fluoridation level in hot, dry regions be 0.6 instead of 1 part per million. It is also suggested that the amount of fluorosis be used as a biological test of how much water children consume. (What it would actually indicate, if anything, would be the water consumption of 6 to 8 years previous.)

Also, in 1951, Maier of the Public Health Service (Proceedings of the Fourth Annual Conference of State Dental Directors with the Public Health Service and the Children's Bureau, p. 65), said that "the criterion we have been using is that if there is some 10 to 20 percent fluorosis in the community, that would not be objectionable, because in those places the degree of intensity is not greater than the accepted designation of 'mild'."

Dean stated that his testimony was based on the study of the "21 cities." The listed authors are Dean, Arnold, Jay, and Elvove. The actual examinations were done by Johnston and Short, except at Waukegan and again at Maywood where their diagnostic criteria were "calibrated for a few weeks" by Arnold. The work extended from September 1939 through October 1940, and was reported in Public Health Reports, April 11, 1941 (hereinafter referred to as study II). In each study, the cities were given a mottled enamel index "in accordance with a previously described method," and the reference is to chapter XII, by Dean, in Gordon's Dental Science and Dental Art (Lea & Febiger, Philadelphia, 1938, and hereinafter referred to as Dean, 1938).

To my knowledge, Dean has published five descriptions of mottled enamel classifications, as follows:

1. Journal of the American Dental Association, August 1934, pages 1421–1426 (hereinafter referred to as Dean, 1934).

2. Public Health Reports, March 29, 1935, pages 425–427 (referred to as Dean, 1935).

3. The one in Gordon, cited above as Dean, 1938.

4. One in Florine and Dental Health (AAAS, Washington, 1942) (referred to as Dean, 1942).

5. One in the report of the bureau of public relations of the ADA written by Dean and Arnold (Journal of the American Dental Association, August 1943, pp. 1278–1283), and referred to as Dean, 1943.

He has also presented illustrations of the classification in:

6. Chapter VII, of Pelton and Wisan, Dentistry in Public Health (Saunders, Philadelphia, 1939) (referred to as Dean, 1949); and

7. In the hearings of the Delaney committee, 1952.

Dean 1934, 1935, and 1938 are substantially identical with one important difference. In 1934, Dean said: "No brown stain is present" in the "very mild" classification. By 1935, he had learned better, and said:

> Brown stain is rarely observed in the mottled enamel of this classification, and, if present at all, is so faint as to be almost indistinct.

This wording is repeated in Dean 1938.

In this connection we should note two things:

(*a*) All these studies were made on children, and Dean knew that brown stain if present would darken with age, and if absent might appear later. In the Journal of the American Medical Association, October 17, 1936, page 1269, he said:

> Teeth affected with mottled enamel * * * erupt showing a dull chalky white appearance which in many instances later take on a characteristic brown stain, the frequency of the brown stain increasing with age.

This is confirmed by his own studies, by other studies by the PHS, and by the work of Massler and Schour (Journal of American Dental Association, February 1952, pp. 156–165) who found that the apparent damage increased right up to age 60. As a result, teeth classified as normal at age 14 may later be "questionable," and many of the "questionable" are proved to have been "very mild" or "mild."

(*b*) Dean also knew that the amount of brown stain, even of badly mottled teeth, varies widely in different communities, and says:

> Many cases of white opaque mottled enamel, without brown stain, are classified as moderate and listed in that category."

(Dean 1934, 1935, and 1938.)

The illustrations in Dean 1934 and 1935 are identical and are artist's drawings. They show extensive changes on the front teeth in the "questionable category". The later pictures are photographs, and in general it is impossible to distinguish white flecks from high-lights. However, in 1934, he says they may show—

> occasional white spots, 1 to 2 millimeters in diameter—

and in 1935 and 1938 he says:

> In addition, the summit of the bicuspids often shows an unusual white opacity 2 or 3 millimeters in extent.

In 1934, 1935, and 1938, he says these teeth are "definitely not normal" but indicates that there may be doubt as to the cause. In 1934 he says:

No attempt is made to diagnose these small white spots or minute white fleckings as the earliest signs of mottling by examination of the person per se. Recourse is always made to group study.

This is what he meant in the Delaney hearings, top of page 1649, when he said:

You don't know what it is.

And as to balancing the light 3 or 4 ways with a mirror, in Public Health Reports, September 10, 1937, page 1252, he says:

At Clovis, the diagnosis of the degree of mottled enamel severity was based on a careful visual examination without the aid of mouth mirrors. * * * The signs of chronic endemic dental fluorosis are so objective that little variation in incidence is noted using either one or the other of these methods.

So much for the category of "questionable". "Very mild" is the next category and, as we have seen, sometimes shows brown stain. In Dean 1934, 1935, and 1938, we are told that it is—

principally observed on the labial and buccal (i. e. toward the lip or cheek) surfaces; that it involves up to 25 percent of the affected teeth.

And in all three descriptions of "mild" fluorosis we are told:

The white opaque areas * * * involve at least half the tooth surface—

and

light brown stains are sometimes apparent, generally on the upper incisors.

In Dean 1942, he describes his new "weighted average" method for calculating a "community index of fluorisis" and gives, on page 26, a greatly abridged description of the categories. It omits all mention of brown stain in the "very mild" and "mild" categories, although in all the seven sets of illustrations brown stain is shown on the upper front teeth of "mild" fluorosis. And, whereas Dean 1934, 1935, and 1938 had said that in mild fluorosis "at least half" of the tooth surface was involved, in 1942 he says that—

the white opaque areas * * * do not involve as much as 50 percent of the tooth.

Under "very mild" in the 1942 statement he says:

Frequently included in this category are teeth showing no more than about ½ millimeter of white opacity at the tip of the summit of the cusps of the bicuspids or second molars.

And at the Delaney hearings he stated that such was usually the case. However, in the earlier classifications such teeth were called "questionable" unless the areas were also pitted, or larger than ⅔ millimeter.

In a footnote, he explains that—

In our earlier studies such teeth were commonly classified as "questionable"; during recent years, however, they have been invariably listed as "very mild."

He thus implies, without saying, that the 1942 classification was used in studies II and V.

But as we have seen on page 11, supra, the original reference is to Dean 1938. There is much supporting evidence, both statistical and documentary, of the use of the 1935–38 classification. For example, in Public Health Reports, February 10, 1939 (the same year studies II

and V began) a footnote referring to Dean 1935 (identical with Dean 1938) reads:

This classification of diagnosis has since been abridged by combining "moderately severe" and "severe" into one classification: "severe"—HTD.

I can find no other mention of revision until 1942.

Furthermore, Dean testified (Delaney hearings, pp. 1647–1648) that the recommended figure of 1.0 parts per million was based on "the study of the 21 cities" and was the "result of plotting a curve on the 21 cities." (See fig. 1, appended.) And throughout his testimony kept basing his answers on evidence from "the 21 cities." This is the study by Dean and others (Public Health Report, Apr. 11, 1941, and Aug. 7, 1942) to which I have referred as studies II and V.

THE TRUTH ABOUT THE 21 CITIES

But elsewhere in his testimony (pp. 1652 and 1653) Dean stated that data from Maywood and from Marion were without significance because of changes in the water supply during the lifetime of the children examined. That reduces the 21 to 19.

Repeatedly, and over many years, Dean has pointed out that no conclusions can be drawn from the quantitative studies made where there have been changes in the source or composition of the water during the lifetime of the group examined. He said it in Dean 1938, page 405. He said it in study II. He said it in Public Health Reports, December 6, 1935, on page 1720. And he said it in the American Journal of Public Health, June 1936, page 569.

In the last article cited, on page 573, he lists Galesburg as lacking the "requisites for quantitative evaluation" because of changes in the water up to 1928. Nevertheless, he used Galesburg as one of the key cities in his case for fluoridation. The statement that protection against decay exists even in the absence of visible mottling is based on Galesburg (and rests on a fallacious argument at that). The promised two-thirds reductions in tooth decay is based on the Galesburg-Quincy study. And Galesburg was used as one of the "21 cities." So now we have 18.

But that is not all. If we study the water histories of the 21 cities, as given in studies II and V, we find that not only in Galesburg, Maywood, and Marion, but also in Elmhurst, Aurora, Joliet, Elgin, and by specific statement, East Moline, there were changes which make them completely unreliable as evidence. Now we are down to 13, and there is a real question about Lima.

So, actually the 21 cities of which Dean testified boil down to Colorado Springs with 2.6 parts per million, Kewanee with 0.9, Pueblo with 0.6, and 9 cities with 0.2 or less parts per million of fluoride.

These facts were published in Dean's original articles, and it is reasonable to assume that he knew them then. They completely invalidate all conclusions based on the study, which means the entire case for fluoridation. He knew this in 1952, as his testimony proves, and we may assume he knew it all these years. And if the articles were ghost-written and he actually didn't know what was in them at the time, he should have told the world when he found out. Instead, he testified under oath about 21 cities.

THE STRANGE CASE OF AURORA

Aurora is the second key city in the case for fluoridation. It is the one used to prove that front teeth are not affected. It was also one of the cities selected by McClure for his strange studies on fluoride retention and on fluoride effects on bones and growth. (He also used Galesburg, Joliet, and Elgin, as well as Amarillo and Lubbock, Tex., both listed by Dean in 1936 as lacking the requisites for quantitative evaluation.)

It is also the city used as a basis of comparison with Grand Rapids in the Public Health Service experiment. Fluoride was added at Grand Rapids (1945), Aurora was the standard of expected results, and Muskegon was left without fluoride as control.

The water history of Aurora is therefore important. The children studied (studies II and V) were 12 to 14 in the fall of 1939. They were born in 1925, 1926, and 1927.

Up to 1940, Aurora used water from 13 wells (according to study II). The amounts contributed by the different wells was quite variable.

Well No.	Year drilled	Amount of fluoride	Date abandoned
1	1891		Not given.
2	1892		Do.
3	1893		Do.
4	1895		Do.
5	1910		Do.[1]
6	1915	0.5 parts per million	Still in use.
7	1916	0.7 parts per million	Do.
8	1916	1.3 parts per million	Do.
9	1923	do	Do.
10	1923	1.1 parts per million	Do.
11	1928	[2]	Do.
12	1929	[2]	Do.
12a	1936	[2]	Do.

[1] Well No. 5 was out of use and no water pumped from it during 1935-39 (and for an unstated prior period). It was repaired and returned to use in 1940. The fluoride content after repair is not given.

[2] A mixture of these waters in unknown proportion in 1939 showed 1.2 parts per million. Between 1935 and 1939, these 3 new wells supplied from 40 to 70 percent of the water.

It is clear that the water used by these children while their front teeth were forming (up to about age 3 or 4) was not the same as that used while the bicuspids and molars were being formed later. It is also clear, from the lack of fluorosis in the front teeth that the earlier amount was significantly lower. (This is the only known cause for this finding and has been frequently observed.) In spite of all this, 15 percent of the children had definitely mottled teeth, and 32 percent more had questionable mottling.

Nevertheless, on the same page on which the water history is given, Dean says:

> From the standpoint of a population exposed for a long period of time to a water supply containing small amounts of fluorides, Aurora appears to offer many advantages for epidemiological study. Since 1898 the public water supply has been obtained from wells *into* the Cambrian Potsdam sandstone. (Italics mine.)

He fails to mention that they passed through and received varying amounts of water from the water-bearing Niagaran limestone, and the St. Peter sandstone. From then on he settled for telling people that Aurora has used the same type of water supply for over 50 years.

I believe it can be shown that, without exception, the witnesses for fluoridation testified falsely, but in the other cases it is harder to show that they did it knowingly. In general they were merely parroting in irresponsible fashion, things they had been told. My notes indicate that some of them have perjured themselves elsewhere, but I have not yet had an opportunity to examine the actual record of their testimony.

FAULTY METHODS USED

One of the things they teach you in grade-school arithmetic is that you can't add dissimilar things. This is not because of any narrow-minded rules, but simply because the number you get doesn't mean anything. The 5 you get by adding 1 boy and 4 bicycles has nothing to do with the 5 you get by adding 4 boys and 1 bicycle, and neither is 5 of anything.

You can't even add different sized units of the same thing. One foot and four inches isn't five of anything. It is either 16 inches, or 1⅓ feet.

These things don't work in arithmetic or anywhere else in mathematics. Neither do they work in physics, in chemistry, in engineering, or anywhere else. Any time you do them, you are in trouble.

Yet, when the men who should know better add up decayed, filled, and missing teeth, getting something they call a DMF rate; and when they tell us things based on comparison of such rates; we bow in reverence and do whatever they tell us to do even if it kills us.

UNRELIABLE EXAMINATIONS

But that is not all. You can't even tell how many teeth are decayed. In the Journal of the American Dental Association, December 1941, pages 1959–1961, Radusch (chairman of the Minneapolis caries study group), reports a comparison of work done by 8 dentists examining 33 patients. Each patient was examined by 3 (in 1 case only 2) examiners who could take as much time as they liked and knew their findings would be checked by the others. The reported findings show a standard deviation of from 40 percent above to 40 percent below the average number of cavities found.

The same sort of thing occurs when the same man repeats his own examinations. Dirks, Amerongen, and Winkler (Journal of Dental Research, June 1951, pp. 346–359), found that by cleaning and drying the teeth, using rubber dam, separators, and spotlights, spending 4 to 5 hours on each examination, with 2 examiners each making 2 examinations and comparing results, they would get fairly reproducible findings. They discarded the method as too cumbersome and still too inaccurate to be reliable.

X-RAY ALSO UNRELIABLE

When you use X-ray, you are no better off. It is more reliable for cavities between the teeth, but less reliable for cavities on the exposed surfaces. In the Journal of the American Dental Association, August 1934, Ennis tells us, on page 1373, that on examining 883 students he found 1,662 decayed teeth clinically as against 1,372 found by X-ray but that the examinations agreed in only 237 cases. Decay

was found clinically but not by X-ray in 1,425 teeth, while it was found by X–ray but not clinically in 1,135.

And to cap it all, Durkett (Journal of Dental Research, vol. 20, pp. 70–76, 1941), found that 54 percent of cavities found microscopically were found by neither X-ray nor clinical examination.

EXPERIMENTS MEANINGLESS

These things are not too serious from a personal standpoint. If a cavity is of any consequence, it will get big enough to find. From an experimental standpoint, however, they are devastating. Neither individual nor statistical comparisons can have any meaning. You can compare two mouths and be very sure that one is better than another, but you can't attach any number with any possible meaning to the differences.

For these reasons, the experiments at Newburgh, Grand Rapids, and elsewhere can never prove anything if they go on a hundred years (except probably that they have produced mottled teeth, and possibly that they have caused more or less serious other damage, and when these things become known, it will be far too late to undo the damage).

And there are other reasons why most of these experiments will never prove anything. They were not designed to ascertain facts, but to prove a point. Blayney, at Evanton, has used faulty methods, but has made a serious and sincere attempt to run a respectable scientific experiment. He, however, is frowned upon in public health circles for being honest.

All this boils down to the plain fact that there is no possible basis for the promise of 65 percent reduction in tooth decay. Neither the experimental nor the "epidemiological" evidence proves anything. And you couldn't even know if it occurred. It is our fantasy, and fraudulent fantasy at that.

It is true that there are places where there is more fluoride and less tooth decay than in others. There are also places where the reverse is true. We aren't told about the latter. Figure 2, appended, shows examples.

Figure 3 shows the lack of any reliable relationship between the amount of fluoride in the water and the damage done to teeth. The figures are accepted at face value from the literature. If anyone wants to prove that they are unreliable, it's all right with me. Almost all of them are quoted from Dean. Ockerse found (Dental Caries, Department of Health, Pretoria, South Africa, 1949, p. 51) that—

> it was not possible to correlate the degree of mottling with the amount of fluroine in the drinking water.

He attributed this to variations in the amounts present in the same supply. As we have seen, there are other important reasons.

OTHER FLUORIDE DAMAGE

We have seen that McClure claims to have proved that fluoride cannot accumulate in the body because it is almost all put out in the urine. We know his proofs are false. But in any case, "the proof of the pudding is in the eating."

In the Journal of the American Medical Association, October 17, 1936, page 1273, Dean says that—

bones of the residents of Colorado Springs or Cripple Creek contain about six times as much fluorine as "control" bones which were from New York City and Washington, D. C.

In the same article, page 1270, he says:

Lemmon, a pediatrician of Amarillo, Tex., an endemic area, records that "some of these babies have more tendency to bowing to the legs, even in the face of constant antirachitic therapy, thus supporting the theory that the toxic fluorides interfere with bone and dental metabolism."

In 1933 (Physiological Reviews, vol. XIII, No. 3, July 1933, pp. 277–300) McClure reported (pp. 295–296) that—

Stuber and Lang observed a number of hemophilic patients (bleeders) with amounts of blood fluoride so abnormally high, that they were led to suspect fluoride as a causal factor.

And that—

the blood of normal persons residing in Freiburg, Germany, would clot in 9 minutes, whereas in the region of Kiel, the clotting time varies from 10 to 17 minutes.

And that—

Analysis of Kiel tapwater revealed a relatively high content of fluorine as compared with Freiburg water, which contained no fluorine.

In the same article, page 291, he reports that—

dilutions of sodium fluoride as low as 1:15,000,000 (one-fifteenth part per million) may inhibit the action of lipase (a fat-splitting enzyme).

Almost everything that happens in the body is accomplished or influenced by enzyme action, yet in the American Medical Association's Handbook of Nutrition, McClure casually mentions (p. 143) that—

fluorine is a powerful antienzymatic agent—

and says (p. 148) that—

The effects of fluoride on enzymatic processes were recently reviewed thoroughly by Borei—

in a foreign publication for which McClure gave an incomplete reference, but which I have.

NO PROOF OF SAFETY OF FLUORIDES

When a drug is added to the public water supply, the burden of proof that it is safe should rest on those who put it there. It should not be necessary to prove it harmful.

However, I can find no record that at Newburgh or elsewhere, any proof has been offered that fluoride does not cause bowing of the legs, or increased tendency to bleeding, or osteomalacia in the aged, or osteosclerosis or otosclerosis, or premature aging, or interference with the development of the jaw with malposition of the teeth, or increased pyorrhea, or any of the other effects that have been reported, much less those we may not yet suspect.

I cannot find reports of blood-calcium levels, and they should be made on individuals, and not be determinations on "pooled blood" like McClure's pooled urine analysis.

PROOFS FROM CENSUS FIGURES AND VITAL STATISTICS

The "proofs" offered by the Public Health Service based on epidemiological studies of vital statistics and census figures are so meaningless that it is funny. There is no proof of fluorine content of the water in past years, and no proof of how many individuals used it how long. It is known that ill effects may take 30 years or more to become manifest. Yet few cities have had an unchanged water supply for 30 years, and not too many people stay put for 30 years.

Moreover, most of the effects of fluoride are unreported in the vital statistics. We don't report bowed legs, or deafness, or hemophilia, or osteomalacia, or even stiff back (and it can become literally stiff as a poker). And if they were reported, there is nothing in the report to show which were caused by fluoride and which were not. That might be determined by chemical analysis (as in Keil and Freiburg) but it rarely is. There is little incentive since no one can undrink water consumed last year, much less 30 years ago.

You will be told that these things do not happen at one part per million, but they can and do. We have seen that it is the dose, not the parts per million, of fluoride that matters. Tenfold differences in intake from the same source are commonplace.

In a Public Health Service investigation (Public Health Reports, Oct. 26, 1951) on page 1398, Russell and Elvove report that, both at Boulder, with no fluoride, and Colorado Springs, with 2.6 parts per million—

> The percentages of third molars in eruption which were decayed, missing, or filled was high, rising with age from 70 to nearly 100 percent at Boulder, and from 50 to over 90 percent at Colorado Springs.
>
> About three-quarters of all DMF third molars were missing in both groups. At Boulder 94 percent of third molar loss was reported as due to dental caries and about 3 percent due to malposition of the teeth. At Colorado Springs about 36 percent of third molar loss was reportedly due to dental caries and about 62 percent due to malposition of the teeth.

This figures out that 23 times as many third molar teeth were lost because of malposition, at Colorado Springs as at Boulder. This sounds like quite a significant difference and I, for one, would rather lose a wisdom tooth because it was decayed than have it dug out because it came in crooked.

OTHER FALSE STATEMENTS

You will be told that all fluoride ions are alike, regardless of their source, which is true. You will be told that because of that, the effect of sodium fluoride added to the water can be expected to be the same as that of fluoride naturally occurring in the water, which is absolutely false. The chemical behavior of fluoride ions is vastly different depending on the company they are in. This is even more true of their physiological behavior.

In general, fluoride-bearing waters have picked up significant amounts of other minerals, and especially calcium, along with the fluoride. Adding sodium fluoride, a form in which it rarely if ever reaches natural waters, to a water of relatively low mineral content cannot be expected to produce the same, or even similar results.

Deatherage reported (Dental Fluorosis, AAAS, Washington, 1942, p. 83), that in a certain region was a form of shale which—

> contained glauconite, natural greensand, which softens the water percolating through it and also furnishes fluorides. It is these soft waters which cause the most severe mottled enamel.

You will be told that the addition of fluoride is no different than the generally accepted addition of chlorine. This is wholly false.

It is true that fluorine and chlorine belong to the same family of chemicals, despite which they are chemically as different as day and night, and physiologically as different as day and bicycles.

The amounts of chlorine used are not known to be harmful and the amounts of fluoride are. Chlorine can be readily removed from the water by heating and fluoride cannot. Also, there is an essential difference in the purpose for which they are added.

Chlorine is added to make the water safer, by destroying more harmful things which are, or may be, present. Fluoride is added for the purpose of acting on, and altering, the body of the consumer. Chlorine is intended to destroy typhoid bacilli. Fluoride is intended to act on you and your children.

THE WATER SUPPLY IS NO SUITABLE VEHICLE FOR MEDICATION

Quite aside from the moral, legal, philosophical, and religious objections, which should preclude any thought of fluoridation, there are medical reasons against putting any drug in the water supply. In fact, it is medical insanity.

You don't mix a solution of any potent drug, hand it to a patient, and say: "Take as much as you like. You are sure to get the desired effect and can't be harmed."

When any drug is added to the water supply, its dose is tied to water consumption, which is highly variable and wholly unrelated to need for the drug. Moreover, if my child drinks little water, and I think he is not getting enough of the drug, I dare not give supplemental dosage because I can't know how much he is already getting in the water.

It follows that only the exceptional child who happens to drink the expected amount of water can get a correct dose. All others will get too much or too little.

Another important objection is that it is impractical to use "drug grade" chemical in the water. It is too scarce, and too expensive. The fluoride they use is meant for industrial use, not human consumption. No druggist would be permitted to dispense such impure medicine even if his conscience would let him.

OTHER METHODS AVAILABLE

If and when fluoride is proved desirable, it can be individually prescribed and dispensed. It can be now, although few physicians or dentists do so, either for their patients or their families. This in itself should cast doubt on the project to force it on everyone.

Alternatively, it can be added to milk, or to salt, and in either case the dose can be controlled far better than in the water supply. (Salt consumption is far less variable than water consumption, and fluoride-free salt would, of course, also be available.)

Any of these methods would be safer, could be cheaper, and would be generally preferable to putting it in the water. Moreover, they would be optional, and based on education rather than compulsion. And that is precisely why the Public Health Service opposes them so violently.

Beyond any reasonable question, the sole purpose in wanting to add fluoride to the water supply, rather than offer it in some saner fashion, is so it can serve as precedent for compulsory medication in noncontagious disease.

THE PHS IS DETERMINED TO "PUT OVER" FLUORIDATION

The Public Health Service has already spent amounts running into the millions on the direct and indirect promotion of fluoridation, and when Surgeon General Scheele told State and Territorial Health Officers (Public Health Report, February 1953, p. 177) that—

> The skeptics must be convinced that our epidemiological and laboratory studies are valid and that the benefits of fluoridation are not to be discarded lightly in the face of uninformed opposition—

nobody thought he was kidding; or that he meant they should produce some valid studies. It was a directive to get out and sell a bill of goods, and it came from the man who controls the subsidies on which they depend.

Nor is that the only place where hope of reward and fear of punishment enter in. And when the University of Washington, or of Michigan, puts on what amounts to indoctrination courses in pseudoscience, or when the people from Texas want it made very clear that the university is not to be held responsible for Alfred Taylor's objectionable findings, the hope of subsidies or fear of their loss may enter in.

TOTALITARIAN MEDICINE

We hear a lot about socialized medicine, and it has been charged that fluoridation will lead to that. Such is not the case, and if it were, so what. We already have socialized medicine all over the place, and good or bad, nobody seems to get much excited about it.

Socialized services are offered at the taxpayer's expense, and you are free to use them or not as you choose. Fluoridation is totalitarian medicine, in that it is compulsory, and things are done to your body whether you like it or not. Its only purpose (except for the secondary one of providing jobs and "empire") is to serve as precedent for compulsory medication.

And in Public Health Reports, January 1952, page 5, the Public Health Service stated editorially its—

> conviction that physical fitness, for civilians as well as for troops, was a duty owed the Nation.

JUST ONE OF MANY

Fluoridation is no isolated aberration in the public-health movement. You will find the same things going on in the fields of tuberculosis, of cancer, of polio, of mental disease, and even of nutrition. And if they don't scare us, they should.

The newest thing in public-health circles, these days, is something called "behavior-centered health education." Its essence was well ex-

pressed to me 1 day here in Washington, D. C., in 1950, by an old friend of mine. He said:

> We are under no obligation to tell people the truth. They couldn't understand it anyway. Our duty is to tell people whatever will make them do what they ought to do.

The same point of view was expressed by Frank A. Bull, director of dental health in Wisconsin, where 50 of the first 100 cities put in fluoridation. It was at a symposium on fluoridation of public water supplies at the University of Washington, on April 27, 1951, and he said:

> The public has a right to expect leadership from us. If we are going to present this fluoridation program to the public with a lot of indecision * * * we might as well forget all about a fluoridation program. * * * People must be told definitely what they should or should not do to bring about an improved public health. When through our collective research, thinking and judgment, we have decided that fluoridation or any other procedure is a public health measure then we must tell the public that they should adopt that program and explain to them how and why we arrived at those conclusions without creating unnecessary doubt and suspicion in their minds.

THE FOURTH ANNUAL CONFERENCE

From June 6 to 8, 1951, the Public Health Service and Children's Bureau held the Fourth Annual Conference of State Health Directors, in the Federal Security Building. The proceedings of the conference should be required reading, but are difficult or impossible to obtain. All I have are photocopies.

This same Frank Bull was brought to tell the health directors how to "put over" fluoridation. They were told how to rig endorsements, how to use civic organizations, and especially PTA's, how to use the press, how to "build a fire under people," how to "give the business" to engineers and waterworks people, how to play off one group against another, and so forth.

They were told to have some sort of answer for every argument, not to permit opposition on the program, and never, if it could possibly be avoided, to let the matter come to the vote of the people.

They were told what to say, and what not to say, what words to avoid. For example, they were told to admit that fluorosis would result, but to say that fluorosis in that amount made teeth more beautiful.

At the end they listened to reports of "group discussions" which recommended that "fluoridation should be the spark to kindle a desire for a full scale dental and general health plan in the community," and that they should use the term "egg shell white rather than chalky white in describing tooth color." (It is now referred to as "pearly white.")

They were also told that if there was something the health department wanted to do that didn't come under the definition of "public health" they should just "embroider the definition a little bit" and then it would be all right.

And at all this, gentlemen, there was no word of protest! And what they did when they got home is in the record. They did as they had been told.

SUMMARY

In 1944, McClure told the American Association for the Advancement of Science that children up to age 12 years drink 1⅔ pints of water a day and weigh 44 pounds. Of course he didn't say it in those words, but that is the way what he says figures out. And what he said is an important part of the foundation for all you are told by the fluoridizers.

He said nothing about averages, but if he had it would still be just as silly. Averages don't drink water, nor do they get mottled teeth or softened bones. It is people, each an individual and every one different, who do these things.

McClure wrote the section on fluorides for the second edition of the American Medical Association Handbook of Nutrition. In it he states that even where water fluorides are highest, people will rarely get more than 8 to 10 milligrams of fluoride daily. But if you allow for the different concentrations, you will find that the average intake of inactive subjects in one of his own experiments was the equivalent of from 2 to 6 times this amount, depending on the climate. If they had been active, the amounts would have been much higher.

In the same Handbook he tells of some experiments he performed, from which he concludes that—

> upward of 90 percent of waterborne fluoride (in concentrations of 0.5 to 4.5 parts per million) is eliminated in the daily urine of teen-age boys and young men.

What his experiment actually showed was that less than half the fluoride in that range was eliminated.

Evidence on these matters is given in detail in my written testimony. We have only time here for a sketch summary. But it is important to remember that these statements of McClure's, and those by Arnold and Dean which I shall cite, form the basis of the case for fluoridation. They are accepted at face value, enlarged, embroidered, and paraphrased, and are repeated so often they are accepted as truer than truth.

Now, as to Arnold. In January 1948 Arnold misstated the findings in his own work. His statement is a little ambiguous, but by the most generous interpretation he understated the number of disfigured front teeth of Aurora children by 65 percent. This was in the most widely read dental magazine of all.

The mainstay of the fluoridators, however, is H. Trendley Dean, formerly with the United States Health Service. He has long represented the American Dental Association in matters pertaining to fluorine. With Anold he wrote an official American Dental Association report on mottled enamel in 1943.

He was adviser to the committee of the American Water Works Association that recommended "endorsement" of fluoridation. He was a member of the ad hoc committee of the National Research Council that endorsed fluoridation.

He was a member of the committees that put out books on fluorides for the American Association for the Advancement of Science in 1942 and again in 1946. He wrote chapters on fluorides in Gordon's Dental Science and Dental Art (1938) and in Pelton and Wisan's Dentistry in Public Health (1949), as well as dozens of articles.

In everything he writes, and in everything based on his writings, it is stated or implied that the effects of fluoride are dependable determined by the concentration in the water—that certain things occur at 1 part per million, and quite different things occur at 0.6 part, or 2 parts or 5 parts per million.

For example, he assures us that no harm will be done at a concentration of 1.0 to 1.5 parts per million, but that whatever effect waters with over 2.0 parts per million have on dental caries is largely of academic interest because the resultant permanent disfigurement of many of the users far outweighs any advantage from the standpoint of reducing tooth decay.

Now, it is true that the dose of fluoride depends to a degree on the concentration, in much the same way as the interest you pay depends on the rate. But in the one case you must know how much money you borrowed and in the other how much water you consume.

You are told that the differences in water consumption are trivial, which we all know just isn't true. You are further told that McClure has proved that everybody on the average consumes about a quart of water a day and will get about 1 milligram of fluoride per day from water with 1 part per million of fluoride. Believe it or not, this is told you in all seriousness by learned dentists and scientists; and if you question it, or the conclusions they draw therefrom, you are uninformed, a crackpot, and lack proper respect for the voice of authority.

But, as we have seen, McClure's own work proves it untrue, as if we didn't know it already. And, as I have pointed out in my written testimony, differences of 10 to 1 in individual water consumption are very ordinary. Disregarding all other factors, these offset the difference between 1 part per million and 10 parts per million, and Dean's distinction between complete safety at 1.0 to 1.5 parts per million and disaster at 2.0 parts per million is, as we said before, just plain silly.

Actually, the complete safety that Dean talks about has nothing to do with what happens to individuals. He has repeatedly said that his epidemiological studies relate to groups, and not to individuals, and that prognosis with respect to any individual is obviously impossible. His original meaning of the word "safe" was that it would not cause obvious disfigurement of more than 10 percent of children. He has since learned that more than that will be damaged by his recommended one part per million, and has revised his definition of safety to allow for damage to 15 to 20 percent.

Moreover, Dean's work was concerned with children up to age 14, and Dean knows that, although the primary damage occurs while the teeth are being formed, before they erupt, it becomes increasingly evident with age; and that if he examined the same group a few years later he would find worse damage and to more individuals.

Furthermore, and whether Dean knew it or not, it is generally recognized that the damage done by fluoride, both to the teeth and to the system generally, depends greatly on the diet, and especially on how much calcium the body gets.

I have also cited evidence that 9 of the famous 21 cities on which the case for fluoridation rests fail to meet Dean's own requirements for reliability. Water histories proving this were included in the original reports, but have not been mentioned since.

Either the water supply was changed during the critical period while the teeth were being formed, or changed later in such a way that we cannot know the fluoride concentration when the teeth were formed. The 9 include all but 1 of the cities in the important range of concentrations. Consequently all conclusions are void, and the whole case for fluoridation falls apart.

Furthermore, I have shown that Dean knew that Galesburg did not meet his requirement when he used it to prove that fluoride would produce a 65-percent reduction in decay; and when he used it to prove that protection from decay exists even in the absence of visible fluorosis; and later, when he selected it as 1 of his 21 cities.

The city of Aurora is of critical importance, so its water history has been consistently misrepresented. It is the city used for comparison in the artificial fluoridation experiments. But its real importance lies in the fact that it is the city always quoted to prove that mottled enamel attacks only the back teeth when the concentration is low.

Of course, this is not true, and is proved untrue by all observations everywhere. There are places where it appears to be true, both at high and at low concentration. The reason is known, and has to do with the period at which different teeth develop.

Children born where there is no fluoride, but who change in early childhood to a water with fluoride, end up with teeth like those in Aurora. The water history makes it clear that this is exactly what happened, but Dean has covered up by saying that Aurora has had the same type of water supply for more than 50 years.

So far we have seen that the so-called experimental basis for fluoridation is faulty. My testimony next showed that all the talk about 65 percent, or any other specified reduction in tooth decay, is nonsense for two reasons: First, because there can be no unit for quantitative estimate of decay (the so-called D. M. F. rate makes no more sense than when children count up pennies, dimes, and quarters to see which has the most money); and, second, because the margin of error in recognition of decay is so great that 65-percent differences are not significant.

Because of these unavoidable factors, and also because of gross faults in the methods, the so-called experiments at Newburgh, Grand Rapids, and elsewhere can never prove anything about tooth decay.

They can, on the other hand, be expected to damage the teeth, and probably the bodies, of countless children, although it is still far too early for the worst damage to be manifest, and, contrary to the promises of Dean and others, we can confidently expect the worst damage on the upper front teeth.

So much for the dental effects of fluorides. The nondental effects are far more to be feared. In spite of McClure's so-called experiments, it is a fact that fluoride does accumulate in the body and that it does do important damage. It is a further fact that damage can occur at 1 part per million of fluoride. A Public Health Service study, where the fluoride was only 2.6 parts per million, showed some 23 times as many third molar teeth lost because of malposition than in a nearby fluoride-free city.

It is also known that fluoride damage is greatly increased whenever, for any reason, the ability of the kidneys to put out fluoride is impaired.

I can find no evidence of any serious attempt by the Public Health Service to find evidence of fluoride damage. The work they have done seems directed solely toward proving that none occurs and the proofs are not impressive. There has been some very sketchy work on the bone-hardening effects (osteosclerosis) of fluorides.

I find no mention of the bone-softening effects (osteomalacia), although they are probably far more common. A report from South America estimates that there are some 10,000 cases in the Argentine. It is the commonest form in animals, both experimentally and naturally, and was described by Bartolucci in 1912, some 20 years before either the dental effects or the bone-hardening effects were known.

Neither have the other known effects of cumulative poisoning been sought. I can't even find record of any wide-scale blood-calcium or calcium-retention determinations.

The so-called epidemiological evidence put out by the Public Health Service is wholly without value. First, there is no water history of the cities, and few cities have had an unchanged water supply for 30 years, which is the time needed for certain effects to appear; second, there is no attempt to eliminate persons who have lived elsewhere or used other water; third, most of the effects of fluorides are not reported in vital statistics; and, fourth, the known effects of chronic fluoride poisoning can all be duplicated by other causes.

The plain fact is that no respectable evidence for the safety of fluoride has ever been offered, while there is abundant evidence of danger; and when something is to be added to a public-water supply, the burden of proof should certainly rest on those who claim it safe rather than on those who say it isn't.

There are abundant and compelling reasons why, even if everything we are told about the safety and effectiveness of fluorides were true, it should still not be put in the water supply. As I have pointed out in my written testimony, it is medically insane. But, far more important, it violates our inalienable right to final decision as to what shall be done to our own bodies except when exercise of that right creates a clear and present danger to the right of others. In this connection it is clear that the so-called experiments at Newburgh and Grand Rapids are in flagrant violation of the most sacred laws of God and man.

It is also in violation of our God-given right to make our own mistakes instead of having self-styled experts empowered to make worse ones for us without our consent.

We are now confronted with a gigantic steamroller, fabricated by the Public Health Service, powered with unlimited Federal funds, and directed from Washington. It is designed to put over the greatest hoax in history, and to destroy, once and for all, the constitutional protections of the citizens. It gives control over our bodies to a group of men who believe that "physical fitness is a duty owed the Nation," that they are under no obligation to tell the truth but should rather tell people whatever will lead them to do as they "ought"; to men who think fuzzily in term of "average people," and are willing to sacrifice up to 20 percent of individuals to improve something they call "the public health" and can't define.

In my written testimony I have given some indication of how the steamroller works, and the results are manifest everywhere we look.

I believe that H. R. 2341 is needed to stop all this, and respectfully request the committee to bring it out with a recommendation of "do pass."

I believe, however, that this is just a start on what needs to be done. I have extensive evidence of similar activities in many other areas of so-called public health, and I am convinced that we need a thoroughgoing investigation of all such activities. I ask this committee to do all in its power to bring about such investigation.

And, finally, I wish to request that my entire written testimony, with its documented refutation of the Public Health Service pseudoscience, be included in the record to serve as source material, and to help counteract the mountains of misinformation that have been published on this subject at Government expense.

The CHAIRMAN. Will you suspend for just a moment, Dr. Exner. I want to see where we are with reference to time, and the people who are present and those who will testify.

(After informal discussion with various people listed as witnesses, as to length of time that they would require, the following proceedings were had:)

The CHAIRMAN. You know, it is awfully difficult for me to say to anybody who has come a distance such as some of these witnesses indicate, which indicates their very great interest in the subject and a very great interest on their part, to limit them as to the time that they should use in speaking; and that applies to these others, too.

I wish the committee were in a position to give you all of the time that you want, but we have so many duties to perform, you know, that it is not possible for us to stay here as long as you might wish or as we might wish.

(After further informal discussion:)

The CHAIRMAN. The committee is going to go into executive session for about 5 minutes. So, I will declare a recess so that the committee may have an executive session and I hope that you folks who are here in favor of the resolution will agree among yourselves as to what time you should have and be able to announce that to me when we reassemble the committee in about 5 minutes.

(Thereupon, the committee took a recess as above indicated, after which the following proceedings were had:)

The CHAIRMAN. The committee will be in order. Someone has placed on my desk a statement that four witnesses, proponents of the bill, have not been called as yet. If I have not called any of their names, will you rise and give your names?

(After further informal discussion as to time required by witnesses, the following proceedings were had:)

The CHAIRMAN. Have you folks agreed upon any division of time between yourselves? If not, the committee will divide the time accordingly. We will allow each witness 15 minutes. With 11 witnesses, that is 165 minutes. That would be 45 minutes this afternoon, until half past 4, and 2 hours tomorrow morning.

Now, if in that division of time, there is anyone who wishes to give or yield his or her time, or any portion of it, to some other witness, they may do so. That is a custom that is very frequently carried out in the House by which one Member will yield his time, or part of it, to other Members who wish to speak.

Mr. FRANCIS J. GARVEY (American Denatal Association). Mr. Chairman, on behalf of the opponents of the bill, I would like to inquire if the committee plans an afternoon session tomorrow, so that I may ask some of our members to catch a plane this evening.

The CHAIRMAN. We are hopeful.

Mr. GARVEY. Thank you, sir.

The CHAIRMAN. Of course, we are in the hands of anyone who may wish to preclude us from doing so. Then we will have to make the time up to you in some other way; but you may rest assured you will have the same amount of time that the proponents have.

Mr. GARVEY. Sir, I was thinking of the convenience of the committee. Some planned to be here Thursday morning instead of tomorrow afternoon, thinking they would be on at that time, and I was trying to get them here tomorrow afternoon.

The CHAIRMAN. That is nice of you to think of our convenience.

I want you to realize we are here for the purpose of giving you folks a hearing and we propose to do so. I do not want you to misunderstand the purpose.

Now, let me ask you, Dr. Exner, how much more time you expect to take.

Dr. EXNER. Mr. Chairman, I can assure you that I have no intention of taking anything like 2 hours. I was practically through. What you referred to as interpolated material was taken out of the back portion of my oral presentation, and I was in fact almost through.

The CHAIRMAN. I will say that you have made a very clear presentation.

I do not know, but I imagine that a great deal of what will be said will be repetitious. In other words, I doubt if every witness could present a different, entirely new story, from that which has already been given. But we must proceed and get through.

Now, how much more time do you wish?

Dr. EXNER. I hope to be through in less than 2 minutes, sir.

The CHAIRMAN. Thank you.

Dr. EXNER. What I wish to say is that I have presented the bulk of what I feel is necessary to present as oral testimony, and with your permission, I would like to merely have appear in the record my written testimony as it has been presented with what I have said considered a mere summary of the testimony and with that statement, I am very glad at this point to withdraw in favor of some of these people who have come so far.

The CHAIRMAN. Well, Dr. Exner, I want you to know, and other witnesses, that their entire statement will appear in the record. I must say, however, that in connection with yours, you have some charts connected with it. I am not sure whether, under the rules of the House, we can make those charts part of the record, but your testimony will appear in the record in full, and in the event the charts are not made a part of the record, if you wish to write a description of each, instead of the charts, we will see if we cannot get it in the record in lieu of the charts.

Dr. EXNER. I would be very glad to do that, and I will not take more of your time. I thank you.

(The description of the charts follows:)

BRIEF VERBAL DESCRIPTION OF FIGURES I, II, AND III, SUBMITTED IN EVIDENCE BY F. B. EXNER, M. D.

Figure I: This consists of two graphs. The first represents Dean's 21 (selected) cities, and shows the relationship between fluoride concentration in the water and "dental caries experience." It has been reproduced many times all over the world as proof of an alleged relationship between concentration and freedom from tooth decay; and as proof that the protection can be obtained at one part per million of fluoride in the water.

The second graph shows how the first graph would look if we eliminated the nine cities that fail to meet the Public Health Service's own requirements for reliability. The nine are eliminated because of changes in the water supply during the lives of the children examined. The second graph makes clear that there is no factual basis for the conclusions which have been drawn from the first.

Figure II: This is a graph that shows that Dean's 21 (selected) cities are in no sense representative. The 9 cities with fluoride concentration of 0.2 parts per million or less have an average of only 2 percent of children with no decayed teeth, whereas the average of 17 other places with the same amounts of fluoride finds 14 percent of children without tooth decay. (Tristan da Cunha was not included or the difference would be much greater. There the fluoride concentration is 0.2 parts per million, and there is no tooth decay in children up to age 14).

Figure III: This graph shows the lack of any reliable relationship between concentration of fluoride and the number of children with fluoride damage to the teeth. It also shows that in this respect, again, Dean's 21 (selected) cities are far from typical.

The CHAIRMAN. It is very embarrassing to me to say to you and to the others, that it is necessary for us to do this, but we have made up a schedule that runs into next month, and it keeps us right with our noses to the grindstone to carry through on our schedule. We appreciate the importance of the views you folks have. For that reason they will be made a part of the record and the record will be given a study in its entirety before the committee makes a decision on this matter.

Dr. EXNER. I wish to thank you for your courtesy, and to tell you that I have no feeling at all of having been cut off, because I felt when you brought up the question of time that I had actually completed, to all intents and purposes, what I planned to say. I thank you.

The CHAIRMAN. Thank you.

(After further informal discussion as to time of witnesses, the following proceedings were had:)

The CHAIRMAN. I would like to make this very plain that if there is anyone present who has not testified, either because they would prefer to put their statement in the record or because they wish to give their time to someone else, they will not be penalized thereby. Their entire statement will be made a part of the record the same as if it had been delivered. The reason I am giving such broad discretion as that is that I am assuming that judgment will be used in the length of the statements. I do not want to have to refuse the entry of books on the subject, and so forth.

STATEMENT OF DR. CHARLES T. BETTS, TOLEDO, OHIO

The CHAIRMAN. Dr. Betts, of Toledo, Ohio.

Dr. Betts is a fellow of the American Association of Educational Research and president of the Anti-Cancer Club of America.

Dr. BETTS. Mr. Chairman. Shall I proceed.

The CHAIRMAN. Please do so.

Dr. BETTS. I noted you asked today "Whom do you represent"? I wish to state that I represent my five boys who have served this country. They fought for freedom, and I am here following in their footsteps—at least one of them, who passed away this week.

The CHAIRMAN. We will be very glad to hear you in their behalf.

Dr. BETTS. Dr. MacWhinnie, of Seattle, Wash., says:

> Step by step, a piece at a time, our Government planners with their vast resources of money, manpower, and time, are weaving a pattern to destroy all vestiges of self-sufficiency in the average American and deliver him as a slave to his Government; all of which is done under the guise of social progress.

We have all been aware of this for years, and have deplored the planned destruction of the very qualities that have made America great. With the exception of voting at the polls, there was nothing the average dentist could do about it until the advent of fluoridation.

This doctor was a member in good standing of the Association of Seattle and was refused to have this article published in the dental magazine.

I wish to state that basic science is composed of three divisions: State board of examiners of dentistry, of medicine, and chemistry.

I am a dentist and have been for about 57 years. I fill teeth; I drill the decayed portions out and often use medicine to treat the tooth before filling, for one purpose, to prevent decay and for the disease of the oral cavity of human beings. That constitutes a part of the practice of dentistry.

We as dentists must learn the part which we play in public life as in the practice of dentistry. We find that these men who treat people through public water systems are practicing dentistry, medicine and pharmacy. We find that they have no record of receiving a license to do this work.

It has reached a point where we have to look to law. We believe in law. We have city charters. There is a city charter of Toledo [exhibiting paper].

I find nothing in there which allows any public official to practice dentistry, law, or chemistry, by using the water department. That, as Judge Galloway said in Shreveport, does not apply to the public or to the Congress of these United States to say otherwise.

Now, I go over this country from council to council and of the many councils to whom I have spoken, only two have turned me down. That is Oberlin, and the one over there at Saginaw, Mich.

So, we find what the water people say. The water people are those who handle the water systems, and I quote from the Journal of Missouri Water and Sewage Conference:

> The waterworks profession's greatest responsibility is acting only on scientific, adequate, and convincing data. To advocate the fluoridation of all water supplies is premature and unscientific. Fluoridation remains an experiment. The simplicity of using the water supply as a vehicle for fluoridation and administration of other proposed corrective and diet-deficient treatment is a temptation, but the policy invites serious trouble that should be resisted by waterworks personnel. Deficiencies fluorine as well as calcium, phosphorus, vitamins, etc., if prescribed anywhere should be in the diet and not in the public water supply.

The first thing a dentist learns, or should learn, when he goes to college is to learn how to prevent decay. That is his job.

Not once have I found in any curriculum of any college in this world where he is taught that fluorine prevents decay. It does just the opposite. I refer you to Funk & Wagnalls Dictionary. I will not read this statement, because it was read here this afternoon; but it shows how we set metals, steel on fire, how it sets water on fire; how it burns up and burns through asbestos. So, I will not mention that.

I might say that we have the great number, or a number of fine dental magazines in this country and almost in every one this subject is well covered; but who knows it? The people do not know it. Here is one that just came from the Dental Digest. This is by Dillon. He says here that the mottling of teeth and the generative changes was found to be the result of the use of thirty-nine hundreds of one part per millimum.

Now, when it comes to the question of fluoridation—this comes directly from Mrs. Sykes, who is head of the Women's League of England:

Compulsory mass medication is immoral what ever the argument for any particular medicine may be. It is against the internationally accepted principles which govern medical experiments on human beings. It cannot be justified by quoting enforced addition to our food in the past. The freedom to choose or refuse—the right to contract out—is fundamental. If, in the future, Montrose decides by plebiscite to fluoridate their water supply, then alternative water supplies must be made available for all those who do not wish to drink medicated water.

This letter is from A. L. Miller, your Congressman here.

Many have asked about fluoridation of water in the District of Columbia. I did introduce a bill in 1951 to make this possible. After hearing the experts on the subject, I withdrew the bill and apologized to my colleagues for introducing the measure. I was misled by the Public Health Service, just as many are now being misled. The District officials, without authority from Congress, proceeded to order fluoridation of water. They should have had legislative authority.

I was ill, 41 years ago, and the best physicians of our city said I would have to pass on. I went to Colorado and there in 1913 found this matter of fluorine, and I think the record will show that to be the first of this country. Then, I began investigating what others have said; what others have found, and I have found every university in the world; I have found none of them which state that fluorine saves teeth or prevents decay. Everyone of them; just the opposite.

A very prominent man in our city, a reporter of the Toledo Blade, came to my office, and I told him about that statement. He said how about Dr. Black of Gainsville, Fla. I said, "I know Dr. Black." I live in Florida half my time. When I find winter coming here, and I find Dr. Black and his son are in the business of furnishing these fluorides. Therefore, his testimony does not mean anything. I kept a copy of the report of the University of Arizona. This report was made in 1933, and it has 18 pictures in here showing what fluorine does to the teeth and how it destroys the teeth. It destroys all of the teeth of animals under their jurisdiction. They have worked on this with guinea pigs, rats, and that is their work.

New Mexico said if the things are true in Arizona, they are just as true in New Mexico. They put in 5 years; 5 years studying this thing out and sure enough they put out one here. [Indicating.] It shows the menace of fluorine to health, and they give the references here. They took them, found out, and published every one of the cities, show-

ing the fluorine content, and how it reduced disease; not through preventing disease.

Now we come to a real good one. This is from Cornell, New York State Veterinary College, Ithica, N. Y. It shows here what it does to the cows; how they eat a little food for about 3 or 4 months, and they lose their teeth. They not only lose their teeth, they get large knuckles; they get very large knuckles. Their bones get soft and when they try to reproduce, they fall down and break their necks, and break their ribs. They become sterile. I mean, the cows become sterile. They become sterile to such an extent that out of every herd out of here, in our country, 20 out of a hundred are sold because they have become sterile and of no account; and when you hit a farmer's business, he does not like it. The result is that is the whole thinking recorded in this book by Udall, at Cornell University—and this is only 2 years ago—1952.

So, I have collected, and collected, all during these years these items, and here you find where in England, it is called a cattle killer; the cattle killer. It may affect vegetables, too. Here is the paper, and it tells about how terrible it is to lose these cows by the hundreds in England, and down here "the unseen enemy is fluorine."

So. I ask our C. D. man here in Washington—civil defense—"What can you tell me about this gas, this fluorine gas we feed to cows?" He says, "We have no record. We have no record; I am sorry to say that I have no information about the episode of England to which you refer, where livestock were killed and eaten—from eating food contaminated by fluorine."

Now, he says he cannot give me the formula.

I have been publishing the formula here for 2 years, nerve tests.

And, he has given 2 pages to this magazine—2 of them. He went before the Health Department and for a long time he had to keep it under cover—for 3 weeks—and it was then given.

The CHAIRMAN. Dr. Betts, the clerk informs me that your 15 minutes have expired.

Dr. BETTS. Fine. I am willing to close.

The CHAIRMAN. Will you leave with the committee those books to which you have just referred, and any of these other papers that will be exhibits in the case, for the study of the committee?

Dr. BETTS. I wanted to show you these items here. I have made it up in this book form and folder, so you can have a thousand times more than I have given here today: a thousand times more, and there it all is. I want to present this to the committee.

The CHAIRMAN. It will be given the study of our commitee and its staff.

Dr BETTS. We cannot understand why people do not react, when they read things like this.

I appreciate the opportunity of having had this hearing. The first time I have ever had such a privilege.

The CHAIRMAN. We thank you for the information you have brought to the committee, and I assure you that we will give it very careful consideration.

Dr. BETTS. Thank you very much. These [exhibiting papers] are along the same line which I would like to have you consider.

The CHAIRMAN. The clerk will take possession of those statements.

(The statement presented by Dr. Betts is as follows:)

STATEMENT OF DR. C. T. BETTS, TOLEDO, OHIO

People and things change. Principles and facts—never. "The penalty good men pay for indifference to public affairs is to be rules by evil men."—Plato.

Basic science act is composed of three divisions—code for the practice of medicine, code for the practice of dentistry, code for practice of pharmacy. All three have a State board of examiners which examines applicants who must have degrees from their respective colleges and show fitness to practice their profession.

I am a dentist. I fill teeth, drill the decayed portion out and often use medicine to treat the tooth before filling for one purpose—to prevent decay or further disease of the oral cavity of human beings. That constitutes a part of the practice of dentistry. Prescribing medicine or chemicals to prevent disease of the teeth or tissues of the oral cavity is dentistry now performed by water boards through fluoridation or by placing metallics on the outside of the teeth to prevent decay—just as I do by placing metal fillings on the inside of a tooth to prevent decay. There is no difference. Both are the practice of dentistry.

Physicians also must comply with the rules, pass a State medical board examination before they can treat human beings for any disease or prescribe medicines for internal or external use. This is the practice of medicine. Medics and dentists are the only persons allowed by law to prescribe chemicals for treatment of disease of the human family. A pharmacist is one who has a license from the State pharmacy board to sell or compound chemicals to fill prescriptions prescribed by the medics or dentists for human disease.

The Federal Government is a higher authority so a pharmacist selling potent poisons or drugs coming under the opium or other act, must make a complete report of such purchase and the buyer must sign his name on the register at the time of purchase. The package must be marked with the skull and crossbones.

The code of law regulating the practice of the above professions is on file at the examining board's offices in every State. It is definitely stated in all of them what constitutes the practice of each and the fines provided for the violations of them by those found guilty of "practicing without a license."

It is my purpose to show that many city officials, including water boards, are now practicing all of the above professions contrary to city charters, State codes of basic science and the higher laws of our Nation regulating human behavior. Such action was never taken before by public officials. Those of Germany, Adolf Hitler and his underofficials applied the same principles as those now known as the proponents of fluoridation. Water boards are now commanded by higher officials, mayors, councils, etc. to place medicine, drugs, or fluorides in public water supply for the purpose of medical treatment of children (human beings) to produce a physiological change in their bodies to prevent caries—the decay of the teeth—that constitutes the practice of dentistry without a license—a criminal act.

It should be noted that the amount of fluorine normally present in water varies from one locality to another, and even within a given locality may vary seasonally or even from day to day, as determined by weather conditions and other natural forces. For this reason an actual control of the fluorine content of the water being dispensed for drinking purposes would require constant checking of the fluorine content of the incoming water, and a considerable flexibility in the quantity of fluoride added to the water which is 85 percent poisonous compared to 15 percent in natural fluoride. Such a blending of deadly poisonous chemicals for dispensing to the public comes definitely within the scope of our laws on pharmacy. The water departments thus are engaging in an unlicensed practice of pharmacy. The prescribing of mixtures of water and fluorides to be sold for internal or even external use, where a medicinal or prophylactic purpose is intended, comes within the practice of medicine—yet the persons making the decisions, prescribing the amounts, and taking the responsibilities, are not doctors or chemists but ordinary citizens who serve in elective positions on our city councils, without (in most cases) either license to practice medicine or even the most elementary technical knowledge of the physiological effects of chemicals on the various organs of the human body.

The law provides that the skull and crossbones be placed on such compounded drugs before sale. The violation by water boards is very clear on this point. Changing a public water system which belongs to the people, over into a medical distribution system for profit to the purveyors of poisonous drugs and mixing machinery, is something unbelievable in America, yet it is now operating on 17 million of our citizens (a prommurder program) represented only as a child

tooth-decay preventative idea. May I call your attention to a recent case of a lady in Ohio who firmly believed a drop of such poison would benefit her husband. Such a small amount was perfectly safe * * *. She put it in his coffee.

Imagine, they charged her with murder and she was eventually electrocuted at the Ohio penitentiary. This lady was no more guilty than Hitler's gang who were stopped at the end of a short rope, or our zealous fluoridators placing a highly poisonous drug in the public water system.

Look at another fine Ohio city. I spoke to their council, showed them what they would be doing if they attempted to kill their women and children with these fluorides. In went the fluorides anyway. In 2 months, thousands were covered with leprosylike sores. Now, $18,000 worth of fluorides are for sale, also the machinery. Try and get the facts from the mayor, any member of the city council or water board or even the newspaper. Evidently, somebody thinks we have some short ropes in this country. Ever since time, as we know it, every city has had laws to provide good, potable, clean, wholesome, pure water for distribution to the citizens. Now, for the first time, officials are turning these cities into chemical distribution water polution centers.

Our Civil Defense Governor, Val Peterson, spent 3 weeks behind closed doors with our health department on this fluorine question and got nowhere with them. He felt compelled to issue a warning. In doing so, he gave a press release as follows:

[Toledo Blade, August 8, 1953]

"Russia Expected To Use Nerve Gas in Any Attack on United States—

C. D. Chief Says—Public Reportedly Knows Little About Horror Weapon

"Washington, August 8 (NANA).—While the world's greatest fear in recent years has centered around the atomic and hydrogen bombs, public concern for other weapons—just as lethal in character—has all but gone by the board. One of these is nerve gas; by far the most potent war chemical known to man. Use of this deadly chemical on unsuspecting, unprepared Americans—they know little or nothing about it—it is no less a possibility today than an attack on the United States by Russia. At a closed-door hearing last month (the testimony was released 3 weeks later) Civil Defense Administrator Val Peterson told the House Appropriations Committee that Russia would probably resort to nerve gas and other chemical agents in any attack on this country.

"RUSSIA HAS THE KNOW-HOW

"Mr. Peterson's reasoning was based on two considerations: Nerve gas is cheap compared to atomic bombs, and American officials are certain Russia has the production know-how. Nerve gas is a German invention. Swarming onto German soil in the closing days of World War II, the Russian Army made a beeline for Hitler's war-gas plants. All the secrets were there including facts about nerve gas, which all Americans should know. Nerve gas ranks with the most horrible of weapons because of the alarming speed with which it downs its victims. The extraordinary difficulties encountered in rescue operations and its capacity for causing panic, it is difficult to discover until it's too late.

"GAS IS CONTAGIOUS

"Death can follow contamination in 1 to 20 minutes depending on the dosage. And the gas is contagious. Contact with a nerve-gas victim can contaminate physicians, ambulances, and hospital equipment. The sight of a victim in the throes of a nerve-gas attack is terrible in the extreme. He struggles in vain effort to breathe, experiencing wheezing, gasping convulsions and massive salivations. Nerve gas enters the body through the eyes, nose, mouth, and pores, seeking out the nervous system. It does not affect the lungs or skin but by damaging the nerves, it renders muscles useless and seriously affects the brain.

"Widespread ignorance of nerve-gas characteristics and the probable successs with which it might be used against uninformed Americans is not the fault of the public. They simply have not been informed. Many high-ranking officials are just as much in the dark. And still there are no signs which point to an administration program designed to educate the public along these lines."

Our Federal Health, Education, and Welfare Committee instead of taking the warning and stopping fluoridation at once, stepped up the pace and pushed to its

*n*th power. When Governor Peterson saw this, he knew the only avenue to put his warning over to the public was to prepare an article for a lay magazine as a highly colored attractive item. Collier's Weekly was decided upon and five pages were given in the November 27, 1953, issue.

"G-Gas—A New Weapon of Chilling Terror

"Quite apart from the danger posed by the fumes, it's possible that droplets of the liquid gas from a low bomb burst might spray civilians. Liquid GB on the skin is painless; it causes no irritation and doesn't burn or scar. A victim wouldn't know it was there unless he saw it fall. But, if he didn't wash it off at once with soap and water or a solution of washing soda, it would be absorbed through the skin into the blood stream and cause his death within an hour. How is it absorbed? Doctors don't know. But they have found that ordinary clothing, rubber boots, even gloves and laboratory clothing offer little protection—the liquid gas seeps right through them. Only specially treated decontamination clothing provides protection and it must be continually washed down.

"Just how does the gas kill? It wrecks the nervous system. Our nerve centers function because of two vital chemicals which the body produces. One, acetylcholine, acts as a bridge between the nerve endings and the muscles and is produced when the brain sends an impulse down to the nerve endings. The second, cholinesterase, moderates the activities of acetylcholine. Without it, acetylcholine accumulates until it causes excessive and uncontrollable muscle activity and eventually convulsions. Nerve gas knocks out the cholinesterase and the accumulating acetylcholine soons sends the muscles into convulsive spasms. Paralysis and death follow."

Again the public paid little or no attention and looked upon it as merely a news story rather than a warning Again fluoridation is stepped up and for the first time in history, a Midwest city on April 11, 1954, passed fluoridation 100 percent and turned it over to the water board. Fluorine has been outlawed by the U. N. for any war purpose. Fluorine compound 1080 is used by the predatory animal board to exterminate and in one season 95 percent of those animals in Oregon and Washington were killed. Fluorine is a rat poison used by Val Peterson for Government experiments to show how to protect Americans in case of attack.

Our own H-bomb recently exploded 2,000 miles from our shores, showered fluorine all over our country eating millions of holes in our automobile glass. It etches or eats holes in glass 1 inch in diameter or larger when it comes in contact with a speck so small it cannot be seen with the naked eye. I challenge anyone to show a single law in our land which allows our water systems to be turned into so-called medicinal dispensing agencies.

I challenge anyone to show that any professor or university of the world where fluorine has been examined, has issued bulletins showing fluorine prevents tooth decay—caries—or that fluoridation is not a hoax, or that fluorine does not destroy teeth, or that fluorine does not destroy all the body, not only of children but animals as small as chinchillas and as large as wolves and horses; or that the Agriculture Department does not advise that it be given to brood sows because it produces abortion. We are in the presence of men who advise that women and children take this drug from the public drinking water system.

The council of Pasadena, Calif., voted to abandon the practice of medicine and the dental profession by fluoridation; that such criminal acts were outside the duties of the council. This was confirmed by Judge U. Galloway of Shreveport, La., Injunction Against Fluoridation Granted, January 4, 1954, as follows:

"* * * medication, in law understanding, including prophylaxis or preventive measures, when applied to the individual * * * Considering the end results that are sought, we cannot escape the conclusion that it is a form of medication, or at least a scientific treatment of a sort of hydrotherapy; by way of ingesting these mineralized waters, of and for the children of the community, under 12 years of age. No person or segment of the population having that condition (dental caries or tooth decay) can on that account have any adverse effect on the health, dental or otherwise, of the general public or of any segment thereof. We repeat, in our opinion, this is not a matter of the public dental health. It is strictly within the realm of individual and personal dental health and hygiene within which each person should be free to choose his course for himself and those for whom he is responsible in the family relation. To this field, the just powers of the Government do not extend."

For many years the American Dental Association spent large sums of money to determine how to prevent caries; decay of the teeth; the prevention and care of the disease. They sent Weston A. Price, D. D. S., all over the world. For 9 years this man traveled into many countries; photographed and sought every source of record information. On his return he was immediately placed on the ADA council. His findings were published in the Journal, afterward in the book Nutrition and Physical Degeneration, 431 pages, the final paragraph of which are these words: "Life in all its fullness is this Mother Nature Obeyed." We read also in the book that "food is fabricated soil." Our life is maintained by food, not by poisonous chemicals. For 30 years the great truths given by Dr. Price has been heralded over the world.

Fluoridation, a new idea, was brought to the attention of the ADA as a cure-all and the prevention of caries, by aluminum interests. Eleven fluorides and aluminas are byproducts of the manufacture of aluminum. Mr. Oscar Ewing, an attorney for the aluminum interests, is claimed to have been on a stipend of $750,000 a year salary. He was placed at the head of our National Security Administration at $17,500 annually. As soon as he got into this Federal position, a sudden emergency was declared to save children's teeth. The only way to prevent caries was to place this deadly fluorine in our public water systems, thereby increasing the sale of chemicals manufactured by his former employers.

An army of agents called directors of national, State, county, regional and divisional and other fancy names, for all the country. These persons are sent to speak before PTA's, commerce, and many other clubs, councils and mass meetings to tell how to preserve the kiddies' teeth. These men have plenty of money; they travel to and from all parts of the United States, wherever people are known to object to drinking fluoride poison; also money grants by the hundreds are paid to university men in localities where citizens are known to be questioning the merits of the use of fluoride in drinking water. Personally, I was severely poisoned by this combined aluminum and flourine gas, so kept every scientific publication I could find, during the last 41 years. When I learned that men like Dr. E. V. Norton, Dr. Parran, and Dr. John Studebaker resigned because they refused to go along with the poison program, I too decided to remove my coat and combat this trend to the best of my ability. I have addressed many city councils and only Saginaw, Mich., and Oberlin, Ohio, refused to listen.

The first record against polluting drinking water came from the Missouri Water and Sewerage Conference, July 1951:

"The ease with which a communal water supply can be made a vehicle for the administration of all sorts of chemicals to the consumers, holds out great promise but it invites trouble. Public health workers and waterworks engineers and administrators have a grave responsibility which extends far beyond any good or evil that may come from fluoridation of the water supply, namely, the responsibility of acting only on adequate and convincing evidence. Any present judgment of the value and safety of this method is tentative. Therefore, to advocate it, except as an experiment, is premature and economically a gamble.

"The waterworks profession's greatest responsibility is acting only on scientific, adequate, and convincing data. To advocate the fluoridation of all water supplies is premature and unscientific. Fluoridation remains an experiment. The simplicity of using the water supply as a vehicle for fluoridation and administration of other proposed correctives and diet deficient treatment is a temptation, but the policy invites serious trouble that should be resisted by the personnel of the waterworks. Deficiencies of fluorine as well as calcium, phosphorus, vitamins, etc., if prescribed anywhere, should be in the diet and not in the public water supply."

We find in Paterson, (N. Y.) Evening News, November 6, 1953:

"Dr. Leonard A. Scheele (Surgeon General) in discussing mass application methods for preventing noninfectious diseases, said a case in point was fluoridation of public water supplies to reduce tooth decay. Such a communitywide attack on 'far more serious diseases than dental decay probably will be forthcoming after laboratory tests have paved the way' he predicted."

The Missouri conference saw this was coming in 1951. I do not yet know if cancer or heart disease will be the next to receive water treatment. Kidney, liver, and nervous diseases will follow, then all diseases will be treated by the public water systems. The time to stop saving teeth and treating all the other diseases by using the water systems is now in my opinion. Let doctors and dentists practice their professions.

WHAT OTHERS THINK ABOUT FLUORIDATION

Winifred M. Sykes, British Housewives League:

"Compulsory mass medication is immoral, whatever the argument for any particular medicine may be. It is against the internationally accepted principles which govern medical experiments on human beings. It cannot be justified by quoting enforced addition to our food in the past. The freedom to choose or refuse is fundamental."

J. McFarland Forbes, journalist:

We find in a recent issue of Health for All, London, England:

"The basic assumption on which the whole case of fluoridation is founded, that the addition to water of sodium fluoride, sodium silico fluoride, or hydrofluoric acid in the precise equivalent of similar concentrations of naturally occurring fluorine compounds (usually calcium fluoride) is completely false.

"Charles Dillon, D. D., S. L. D. S., Fort Williams, found that sodium fluoride reacts progressingly upon bone in extremely low concentrations, while calcium fluoride does not react but is progressively absorbed. Dr. Dillon remarked: 'This is a completely new statement of the facts which has not even been touched upon by those who are ready to consider their work so satisfactorily complete that they are now prepared to fluoridate the water supplies of the whole world.' I would like to see this quotation in letters of fire burning over every city hall where councilors are toying with the idea of fluoridation. I suggest that rat poison should be used on rats and that human beings be allowed to drink fluorine-free water."

All universities where extensive investigation has been made on animals and children do not issue bulletins which shows that fluorine prevents decay. Just the opposite, they show destruction of not only the teeth but all organs of the body. I refer you to bulletin No. 45, University of Arizona. Eighteen pictures of animals, four of children whose teeth shows destruction by fluorides.

University of New Mexico, No. 349:

This work is most complete showing parts per million fluorine content of every village and city and the effects upon children, animals and bones, called The Menace of Fluorine to Health.

The Cornell Veterinarian, volume XLII, No. 2, Ithaca, N. Y., State College, by D. J. Jdall and Keith Keller:

Fluorosis in cattle.—This work shows the effects of fluorine on cattle, how it destroys teeth, bones, and the reproductive organs, stunts the growth, causes diarrhea. Cows have estrum every 9 days and bulls are unable to breed after eating fluorinated food, about 3 months. An excellent bulletin for women to learn how to keep a family small.

The Agricultural Department issues bulletins on how to destroy worms in pigs, No. 274, which informs the farmer not to feed fluorine to breed sows; 1 dose kills the worms in nonbred hogs; 1 dose kills the little pigs in bred sows; our Health Department in Washington recommends fluorine for our wives. Ergot and fluorine was sold years ago for abortion purposes. Laws have been passed making it a criminal act to sell it.

It has been a Federal crime to place any nonnutritive or deleterious substance in food offered for public sale, the quantity of fluorine thus used was irrelevant. I point you to Leo Kaufmann, at Boston. All he did was to pass some beer, containing a little fluorine, over a State line. He was heavily fined. Now the Federal law has been changed making what he did lawful but our officials have not returned the $10,000 fine paid by Mr. Kaufmann. Think it over.

This conspiracy to place fluorine in the water is worldwide. Who is behind it? Chemical and machinery manufacturers of the aluminum industry for one purpose only—to make money. Many hundreds of our citizens have become incensed at the arrogance of public officials, doctors, dentists, and others who demand by law that we must open our mouths and swallow potent poisons because they think it is good for us! We have published numerous leaflets, brochures, pamphlets and books all pointing out the damage that fluorine causes. The Civil Defense had a conference with the Health Department over 6 months ago. What was said is still secret but Val Peterson, civil Governor, has issued two warnings, August 5, 1953, to the press and November 29, Collier's Weekly on the poison gas of fluorine. In spite of this, the promotion of fluorine continues—an absolute hoax. The following letter is an example of many received from all over the world:

Leo Spira, M. D., Ph. D., New York City, N. Y:

"As a medical man, I have no hesitation in stating that the principle of adding a potent poison, such as fluorine is, to the public water supplies runs counter to every clinical, physiological and pharmacological doctrine and should be categorically rejected by all means at the disposal of civilized man."

The question of being compelled to eat or drink what public officials think might be good for us, came recently when medics and dentists decided they have higher intelligence and on that account, should dictate what we should consume.

We do not feel that anyone should have the power to compel us to consume that which we do not want. We desire to exercise our right of choice. That is fundamental to liberty and freedom. If denied that choice, we are no longer free men.

W. R. Cox:

"Put fluorine in our water? May God give us the strength to investigate and understand authorities and experts who are, day by day, slowly and surely causing us to demand our destruction."

On June 1, 1863, the Emancipation Proclamation came into force and all men in bondage were made free. Now gradually, as Plato warned, we are being ruled by evil men—those who have no regard for their fellows beings and, if this program works with fluoridation, our freedoms will disappear, one after another, then we may remember our American history and few may recall those words of Patrick Henry but it will be too late.

The time to stop these procrime conspirators is now.

STATEMENT OF MRS. HUGO FRANZEN, SAN FRANCISCO, CALIF.

The CHAIRMAN. Mrs. Hugo Franzen, 767 San Bruno Avenue, San Francisco, Calif.

Mrs. FRANZEN. Mr. Chairman and members of the committee, thank you for the honor and privilege of being here.

The manner in which the poisoning of our water supplies with fluorides was put over in San Francisco—by the usual methods—provides an excellent example as to why Federal legislation is necessary and urgent to stop this scheme.

George Heard, D. D. S., for many years a dentist in Hereford, Tex., called the "town without a toothache," stated in a letter to Mr. Roby C. Day, May 15, 1954:

> I believe that fluorine does, in a mild way, retard caries, but I also believe that the damage it does is far greater than any good it may appear to accomplish. It even makes the teeth so brittle and crumbly, they can be treated only with difficulty, if at all. It is hellish and un-American to put poison in city water supplies and force citizens to drink it. I sincerely hope that at least some of your dentists are cooperating with you in getting the truth about tooth decay over to your citizens.

The methods used in this city and other cities, to put over fluoridation, are equally hellish and un-American.

Before election in 1951, a local dentist publicly opposed by having his name on a little card against proposition M (fluoridation). Suddenly he was silent; after election, he informed me, when some members of the San Francisco Dental Society noticed his name, the secretary of the society came to him and threatened him, stating that if he further opposed fluoridation in any way, they would prevent him from ever again obtaining insurance reasonably and force him out of dentistry. This they could do, he stated, and so he was silenced, just as numerous others have been silenced. The medical and dental societies in this city, I am informed, keep their members in line in this

manner. My 3 years spent in opposing this scheme, confirm that statement.

Apparently, section 20 of the code of ethics of the American Dental Association, prevents any opposition—it reads as follows:

SEC. 20. EDUCATION OF THE PUBLIC.—A dentist may properly participate in a program for the education of the public on matters pertaining to dentistry provided such a program is in keeping with the dignity of the profession and has the approval of the dentists of a community or State acting through the appropriate agency of the dental society.

Where is our constitutional guaranty of freedom of speech?

In April of 1951, the finance committee of our board of supervisors, Chairman Chester McPhee and Supervisors Don Fazackerley and Dewey Mead, scheduled a 2 p. m. hearing on fluoridation, to which I was invited to attend and oppose. A short time before the noon hour of that day, I discovered that the hearing had been set up to 1 p. m. without our knowledege.

At this meeting, Sidney Epstein, D. D. S., representing the San Francisco Dental Society, stated among other inaccuracies, that Springfield, Mass., was fluoridating. I had just read a letter from Paul Manning, D. M. D., LL. B., Springfield, written to Gov. Earl Warren of California, asking for an equal opportunity for opponents, stating that Springfield was not fluoridating and giving the reasons for not doing so.

From the action of the committee, I had to conclude that they assumed the opponents were wrong. A letter to the mayor of Springfield would have quickly confirmed the accuracy of my statement. I can only assume that until quite recently, perhaps, no investigation was conducted to ascertain the accuracy or the truthfulness of the statements of the fluoridators.

Someone had to be wrong.

It appears the opponents were condemned without investigation—this procedure has continued the past 3 years here.

In December of 1953, Supervisor Francis McCarty introduced an ordinance which would authorize the extension of the fluoridation program throughout San Francisco. We opposed, with the results recorded in the following attached copies of letters and comments.

SAN FRANCISCO 11, CALIF., *April 7, 1954.*

HON. FRANCIS MCCARTY,
Member of Public Utilities Committee, City Hall.

DEAR SIR: Although the question of extending the fluoridation program in the city and county of San Francisco has been returned to your committee for further hearing, I am advised through the newspapers that no one will be permitted the floor who has been heard on this matter.

I wish to advise that last night over station on KGO, a broadcast was made of a portion of the debate by the board of supervisors on the subject of fluoridation. This broadcast was heard by many thousands of citizens of San Francisco, during which debate I was seriously misquoted by Supervisor McCarty, very much to my detriment and to the detriment of the cause I represent.

In the interest of fairness, honesty and integrity of the board of supervisors, I demand that on Monday next, I be given the floor of the board of supervisors for the purpose of pointing out these misquotes and correcting the errors for the record, and for the beter information of those members of the board of supervisors who have never heard the full story against fluoridation.

Yours very truly,

MRS. HUGO FRANZEN.

SAN FRANCISCO 10, CALIF., *April 12, 1954.*

HON. GEORGE CHRISTOPHER,
President, Board of Supervisors, San Francisco, Calif.

DEAR SIR: I am issuing this protest as a citizen and taxpayer against certain statements by Supervisors Francis McCarty and Matthew Carberry during the March 31, 1954, hearing of the public utilities committee on fluoridation and the April 5 meeting of the board of supervisors.

Supervisor McCarty, in answer to one of the opponent's questions— why the coming March 31 hearing had not been publicized in order that those who wish to oppose or be present could attend—stated that the hearing had been widely publicized by our newspapers. Supervisor McCarty made this same statement before the board meeting.

I contacted Mrs. Warren Fong of the San Francisco Examiner, Mr. Stewart Rasmussen of the San Francisco Call-Bulletin, the San Francisco News Library, Mrs. Lingle of the San Francisco Chronical and Mr. Griffith of the San Francisco Progress.

All stated there had been no notification of that coming hearing in any of their newspapers.

Supervisor Carberry stated to the board of supervisors, and I quote: "I asked the question if a local, qualified doctor or dentist would or had made a statement on the subject opposing fluoridation as being harmful and I was told no such person qualified would make such a statement."

I quote Supervisor McCarty as he referred to the same statement: "Is there one doctor of reputation in the city and county of San Francisco or one dentist that you can name who is opposed to fluoridation? The answer was "No."

Both statements are false.

Supervisor Carberry asked me if there is any doctor or dentist in this city who opposed fluoridation that I could get to come before the committee and oppose fluoridation. I answered "No," but attempted, unsuccessfully, to explain that answer. Both supervisors discounted and disqualified any information given by those who are not doctors, dentists, etc. Facts are facts and truth is truth, regardless of whether a layman or professional people state those facts. The opponents feel this board of supervisors should understand why no doctor or dentist from this city and county is willing to oppose fluoridation before a committee or publicly. There are doctors in this city who even warn their own patients not to drink the poisoned water, but they dare not oppose publicly. I thoroughly explained this situation to Supervisor Carberry, by phone, after the March 31 hearing and before the April 5 board meeting. One dentist in this city told me that he had been threatened and silenced because he opposed publicly befor election. He (Supervisor Carberry) made no reference to it, however, at the board meeting.

The opponents object to certain statements made by Supervisor McCarty in summarizing the opposition. I quote: "As far as I am concerned, I think the merits are all in favor of fluoridation."

In the spring of 1952, the Delaney congressional investigating committee conducted extensive hearings on fluoridation. Eighteen scientists, testifying under oath, presented both sides. That committee issued a final report and warned go slow on fluoridation. I quote from that final report, Union Calendar No. 787: "The committee believes that if communities are to make a mistake in reaching a decision on whether to fluoridate their public drinking water, it is preferable to err on the side of caution."

I quote Congressman A. L. Miller, M. D., former health director of Nebraska, one of the Delaney committee, in the March 24, 1952, Congressional Record: "* * * despite my best efforts, and from the evidence before my committee, I cannot find any public evidence that gave me the impression that the American Medical Association, the Dental Association, or several other health agencies, now recommending the fluoridation of water, had done any original work of their own. These groups were simply endorsing each other opinions * * *. There is no scientific basis for recommending immediate acceptance of the proposals to treat the entire population with fluorides. The mass medication of fluorides is still in the experimental category * * * the Department of Agriculture has recommended that no fluorides be fed to brood sows. Experimental work on rats and mice indicates a lessened mental reaction in rats and mice who have had fluorides."

In view of the final reports from this congressional investigation, the opponents believe Supervisor McCarty can present no justification of his state-

ments from any competent authorities on this subject that the merits are all in favor of fluoridation.

Supervisor McCarty, summarizing our city health director Ellis Sox's statements said: "There are no findings based on competent evidence that there is any deleterious effect on anybody."

This, too, is false.

I quote an excerpt of a letter from Carlton F. Brehmer, D. D. S., 809 North High, Sheyboygan, Wis., dated October 21, 1953:

"It has been about 7 years since this poison was quietly dropped into Sheboygan's drinking water. Now people are calling more frequently for prophylaxis, and when they come in, and I see the typical brown and white stains I have to explain that these are unremovable and caused from the doctored water they drink. This is a serious disfigurement to those who are interested in their looks.

"What it does to them, further inside, is a question I leave to them to think of. I hope they go home and do think and will, one day, bring the question of fluoridation to a vote here."

Mottled teeth is the first visible sign of fluorine poisoning.

We, opponents, object to the statements of Dr. Ellis Sox, that fluorine is not an accumulative poison. All standard reference works on fluorine state otherwise. Dr. Sox, we believe, can give no verification from qualified scientists in the highly specialized field of fluorine for that statement.

The opponents have repeatedly stated that fluorine is an accumlative poison and offer the following verification for that statement:

The American Veterinary Medical Association, without question, maintains one of the outstanding research organizations among medical groups. The following was prepared by a committee on nutrition. I quote the American Veterinary Medical Journal, June 1943: "Most of the fluorine ingested by animals is deposited in the bones and teeth, the fluorine content of which increases in proportion to the amount and duration of the intake. The continued intake of fluorine finally leads to a saturation of bones and teeth, so that they are no longer able to absorb this element from the blood and the tissue fluids. It is then that the toxic effects of fluorine become apparent. * * * The fluorine content of the soft tissues also will increase, even on very moderate levels of dietary fluorine and eventually these minute accumulations may induce degenerative changes in the kidneys and even the liver, adrenal glands, heart, and central nervous system * * * * after the symptoms of poison appear, it is too late to do anything."

Chemical analysis was made of some hearts of heart-death victims in one of the guinea pig fluoridated cities. One heart contained 80 parts per million fluorine.

I quote the following from an English Dental Journal, Fluorine and Dental Caries, by Charles Dillon, D. D. S., L. D. S., from the Dental Practitioner, Vol. 111, No. 3, November 1952:

"Dr. Dillon, on the basis of data obtained after extensive research into the reaction of teeth and other bony structures to fluorides, is opposed to fluoridation of public water supplies.

"He demonstrated, that the fluorine content of teeth may run as high as 112 to 580 parts per million without mottling but with marked decay. The concentration of fluorine in the teeth of one individual was 340 parts per million while the adjacent jawbone contained 800 parts per million. He also was able to show that there is a difference in the way different fluorine compounds affect the bones. Sodium fluoride is particularly toxic, since it progressively displaces the bone phosphate.

Dr. Dillon states that "the accumulative effect (of fluorides) has not been adequately considered, nor can it be assessed without further specific studies directed to that end alone." He further concludes that "if the doctor prescribes a drug that is known to have an accumulative effect, he should always set a time limit to his medication just in case the cure becomes worse than the disease."

Quote the United States Department of Agriculture Yearbook, 1939:

"Fluorine interferes with normal calcification of teeth during their formation, so that affected teeth, in addition to being usually discolored and ugly in appearance, are structurally weak and deteriorate early in life. For this reason, it is especially important that fluorine be avoided * * *. Correlation studies between the occurrence of mottled enamel and the fluorine concentration of water consumed afflicted persons show that this dental disease is always found when water containing as little as one part per million fluorine is used continuously during the period of formation of the teeth."

I quote Funk & Wagnalls New Standard Dictionary:

"Fluorosis, a disease coming from the ingestion of too much fluorine, is a well established toxicological entity, characterized by increased fragility of bones, due to their atrophy, and interestingly enough by enamel defects in teeth, exposing them to early decay, i. e., producing the very opposite effect to that which fluorine addition to drinking water is to achieve."

In the face of this data, we demand that Dr. Sox either offer some proof of his statement that fluorine is not an accumulative poison from a recognized authority in the field of fluorine and fluorine poisoning or publicly retract that statement.

I quote Supervisor McCarty:

"I feel it is about time that someone would take a stand in defense of decency and integrity. I state the attack upon the medical, legal, and upon our health services was made in the most violent and equivocal language."

We demand that this board of supervisors take a stand in defense of decency and integrity, obtain a copy of the report which I gave at the March 31 hearing, filed with the public utilities committee, and read at this board meeting. Supervisor McCarty's statements cannot be reconciled with the report which I read.

I quote Supervisor McCarty:

"Now, the medical and dental associations and the officials of our State, local, and national health associations have been, in my opinion, the victims of the worst kind of abuse and slander, if you will, in this. And I stated at the committee hearing that I was a layman and I couldn't conclude whether fluoridation is good, bad, or indifferent, and naturally, in reaching a conclusion in that matter, I would rely upon doctors, dentists, biochemists, and health officials in the Nation and the State and the city and county of San Francisco. And as far as I was concerned, I have implicit confidence in the integrity of the medical and dental associations and our National, State, and local health bodies and I feel that statement not only should have been made, but probably should have been made long before this, in the face of the most vitriolic, violent, and unfounded attack upon the people who guard the health of our great country and upon our Government and upon our press and upon our newspapers."

We agree with Supervisor McCarty that "the worst kind of abuse and slander, if you will," has been heaped on the victims, but we don't agree with the supervisor on the identity of the victims. We contend the opponents are the victims—not the proponents—and offer the following proof:

I quote from a letter by Congressman A. L. Miller, M. D., former public health director of Nebraska, dated May 8, 1953:

"Many have asked about fluoridation of water in the District of Columbia. I did introduce a bill in 1951 to make this possible. After hearing the experts on the subject, I withdraw the bill and apologized to my colleagues for introducing the measure. I was misled by the Public Health Service, just as many are now being misled. The District officials, without authority from Congress, proceeded to order fluoridation of water. They should have had legislative authority."

Secret information uncovered by a west-coast Congressman, which was not available to the Delaney congressional investigating committee, can prove to anyone of average intelligence that the opponents—not the proponents—are "the victims of the worst kind of abuse and slander, if you will."

After studying this secret information, one can easily understand why the opponents—composed of laymen, professional people, and the most eminent authorities on fluorine in the world, who, usually at great personal sacrifice—are trying diligently and desperately to guard the health of our great country and the generations to come—so that there will be generations to come; it is easy to understand why the opponents, who have become "the victims of the worst kind of abuse and slander, if you will" using Supervisor McCarty's words, are the targets of the most vitriolic, violent and unfounded attacks from those who have been entrusted to guard the health of our great country, among them Supervisor McCarty.

Furthermore, this secret information records the words of the top echelon fluoridators, including our United States Surgeon General Leonard Scheele, as they plotted against the health, well-being, yes, the very lives of our American people and against our constitutional freedoms. This information explains in detail, the blueprint for misinforming and deceiving our citizens, for preventing the truth from being disseminated, for taking care of the opposition—as Supervisor McCarty took care of us—and for putting over fluoridation. The fluoridators execute the blueprint quite well.

I quote excerpts from the fourth annual conference, State dental directors, with the Public Health Service and the Children's Bureau, Federal Security Building, Washington, D. C., June 6–8, 1951:

Francis Bull, D. D. S., State dental director of Wisconsin, addressing the conference stated:

"I don't know why they [meaning the antifluoridators] didn't include a letter from two-thirds of the deans of dental schools and universities saying that fluoridation is rat poison and should not be used. * * * We are living down a lot of past history a lot of us helped create. These fellows can take the statements of the American Dental Association or the United States Public Health Service or the deans of dental schools or research workers * * * and they can prove to you that we are absolutely crazy for even thinking about fluoridation * * * there is no way of avoiding it * * * Do not tell the people that you are just starting on the fluoridation program in order to promote something else. * * * Sure fluoridation is wasteful, but unfortunately we do not know of any other way of doing—them." And "When they take us at our own word they make awful liars out of us."

Doing them. Could it be the deliberate sabotage of the mentality or the setup for the quick liquidation of our people Dr. Bull referred to as "doing them"?

Mr. James Rorty, famous food investigator, thoroughly investigated this great controversy. I quote from his article, The Truth About Fluoridation, printed in the June 29, 1953, Freeman. "But the intolerance of the fluoridators and their reckless slander of their opponents * * * all this is disturbing, to say the least."

We feel it is obvious, from the preceding information, that the opponents—not the proponents—have been "the victims of the worst kind of abuse and slander, if you will."

We demand that Supervisor McCarty correct his misquotes and errors, and apologize for his slanted and biased summary of the opposition and his unfounded and unwarranted attacks on us.

We also protest Dr. Ellis Sox being given the opportunity at the April 7 hearing to repeat his previous views that fluoridation is safe and beneficial. He appeared, not as an unbiased and competent authority on fluoridation, but as a vigorous proponent. Supervisor McCarty announced at the April 5 board meeting he would permit no one to speak who had already spoken on the measure.

I quote Supervisor Carberry:

"The statement which I made to the opponents the other day in committee meeting was well-intended, respecting the right of any minority to assert itself and get a fair hearing before any board committee and before the board itself."

We now petition this board of supervisors to grant us a fair hearing, at least 1½ hours for each side, before the board—not in committee. We want no recurrence of the public utilities committee hearing and no opportunity for any supervisor to report back to the board his "version" of the opposition. Sacramento City Council allowed 2 hours and 15 minutes for each side, then unanimously rejected fluoridation—the second time that council had unanimously rejected this scheme.

We contend the so-called mandate of the people should no longer be binding upon this board of supervisors. We are prepared to compile a well-documented report, which, we feel, will prove those contentions—that fluoridation was put over in this city by dishonest, treacherous, and un-American methods from the very beginning, even to the election in which our citizens voted for fluoridation. They did so, no doubt, due to the fraudulent, erroneous, and misleading statements on our ballot arguments for fluoridation. Those ballot arguments for fluoridation were approved by three supervisors—Mead, McMurray, and Gallagher.

We brought to the attention of that board of supervisors the fact that error did appear on the ballot. This was simple to prove. I quote from our ballot argument for fluoridation:

"6. Among those strongly urging the adoption of water fluoridation are those groups dedicated to the health and well-being of the community—American Medical Association."

We had in our possession two letters from AMA, which refuted this statement.

We asked that the error be corrected or the proposition be withdrawn. Supervisor Fazackerly, who introduced the ordinance, quickly referred it to judiciary committee after election, so nothing could be done about it and the citizens would vote with fraudulent, erroneous, and misleading statements to guide them. These same ballot arguments were printed in a newspaper.

Ever since election, the supervisors have stated they can do nothing about it as it is a mandate of the people.

The board of supervisors deliberately permitted the people to vote on the issue after the proof had been presented that error did exist on the ballot. I say this is an irregularity in the election and the people are not responsible for voting in fluoridation. They never were permitted to have correct information on the subject.

As a matter of fact, the board voted to place it on the ballot after they had twice passed the ordinance for fluoridation. They did this, perhaps, because I brought to their attention the fact that fluoridation is medication and clearly stated as such in the April 15, 1951, issue of California's Health, our State Department of Public Health Bulletin, in which fluoridation is described as a "preventive therapeutic agent"—clearly medication. The final report of the congressional committee (1952) stated fluoridation is "mass medication without parallel in the history of medicine," and "still in the experimental category." Yet, the proponents continue to state, erroneously, that fluoridation is not medication.

When the board passed the ordinance the second time, it did so because our assistant director of public health, Dr. Erwin Sage, misinformed them when he stated fluoridation is not medication. The board depended solely upon Dr. Sage's advice.

Supervisor Mancuso, chairman of the judiciary committee, had stated if fluoridation is medication, every supervisor knows it is unconstitutional because it would violate freedom of religion guaranteed by the Constitution of the United States. Medication (compulsory) is a violation of the religious beliefs of some religious denominations.

Shortly thereafter we presented them with the information of the California Health Bulletin which describes fluoridation as medication. Supervisor Marvin Lewis quoted from that bulletin to the board and said every supervisor knows now that fluoridation is medication and unconstitutional and if it is forced on the ballot, they do so knowing it is illegal and unconstitutional. The supervisors did it anyway.

Under these circumstances, we feel the fault is one of the city fathers, not the fault of the voters. Every supervisor should be acquainted with the full facts before voting to extend the program.

We believe, in the interest of fair play, honesty, and integrity, this board of supervisors has no choice but to grant the hearing and give the opponents the opportunity to correct the misquotes and the errors and publicly defend our cause against the unfounded and unwarranted attacks by Supervisor McCarty.

Very truly yours,

GOLDA FRANZEN.

Attention of the Interstate and Foreign Commerce Committee to the following comment regarding the preceding letter: I requested that this letter be read to the members of the board of supervisors. The result—the board took more time preventing the letter from being read than it would have taken to read orally as requested. No action was taken on my request for the privilege of the floor.

SAN FRANCISCO, CALIF., *April 19, 1954.*

HON. GEORGE CHRISTOPHER,
President, Board of Supervisors,
San Francisco, Calif.

DEAR SIR: During the April 12, 1954, board of supervisors' meeting, the deputy city attorney, in answer to Supervisor Byron Arnold's question, stated the board of supervisor's could stop the fluoridation program if it was shown that, instead of being a measure to protect the public health, it had become a program which is detrimental to public health.

Enclosed is a letter from a competent medical doctor practicing in this city, a physician and surgeon with over 50 years' experience, which states one of his patients has been greatly harmed by using the fluoridated water. There are many others, but one case is sufficient.

Notice the postscript, please. Dr. Gould's office is not supposed to be in a fluoridated area, but Mr. George Pracy, superintendent of the water company, verified for me the fact that the fluorides had "seeped" to other parts of the water system—not just the sections which were supposed to receive fluorides.

We opponents, therefore, respectfully request that the fluoridation program be stopped quickly, before more damage is done to citizens of this city.

Very truly yours,

GOLDA FRANZEN.

The April 19 letter was read at the board meeting. The ordinance was passed without comment, by unanimous vote. The opponents were given no opportunity to correct the misquotes or inaccuracies.

I now quote excerpts from a report which I had prepared to use, had I been given the privilege of the floor at the April 12 meeting of the board of supervisors:

The information which I shall use, explains why we feel that Supervisor McCarty, rather than conducting a fair hearing—then giving an impartial, unbiased report to the board of supervisors on the opposition—chose to give a slanted, inadequate report with misquotes and errors.

I read from the Third Report, Un-American Activities in California, 1947, page 79. "Sponsors of the California Labor School included * * * Francis McCarty, hearing commissioner for OPA."

The California Labor School, I am informed, has been cited by the United States Attorney General as a subversive organization.

I read from the Fourth Report, Un-American Activities in California, 1948, Communist Front Activities, page 172. "Haakon M. Chevalier, accompanied by his attorney, Francis McCarty, appeared and testified before the committee at its Oakland hearings, November 6, 1947. While his memory was apparently faulty in many respects, he was able to recall some of his affiliations in Communist-fronts and Communist activities."

If I were a Red, pink, or fellow traveler, I would never be unwise enough to choose a loyal American for my attorney. By the same token if I were a loyal American, I would never be foolish enough to choose a Red, pink, or fellow traveler for my attorney, if I knew it. Patriotism and communism are diametrically opposed.

I am informed that Supervisor McCarty is that same Francis McCarty. He lacked the skill to detect communism in operation in the San Francisco Labor School. Would he be any more skillful in detecting communism in action in fluoridation?

We submit the following information to show just and logical reasons for our increasing alarm and determination to stop this hellish and un-American scheme:

United States Surgeon General Leonard Scheele, greeting the fourth Annual Conference, State Dental Directors, with the Public Health Service and Children's Bureau, Federal Security Building, Washington, D. C., June 6–8, 1951, said:

I have just come back from the World Health Assembly * * * Obviously, one of the biggest things facing us is the catalyzing of a real national program of water fluoridation.

Did Francis Bull, D. D. S., State Dental Director of Wisconsin, an avid fluoridator, expose the political scheme when he told the conference:

Do not tell the people that you are just starting on the fluoridation program in order to promote something else * * * Sure, fluoridation is wasteful, but, unfortunately, we do not know of any other way of doing * * * them.

Doing * * * them—doing * * * them. After spending over 3 years in the trenches opposing this scheme, perhaps I can throw a little light on those words "doing * * * them." What is the "something else" Dr. Bull referred to? Could it be the deliberate sabotage of the mentality, or the quick liquidation of our people? Could such a program be honestly termed as anything but chemical rape or chemical warfare?

I quote Harold D. Lasswell, The Garrison State, from the American Journal of Sociology, 1941:

> Still another factor darkens the forecast for the bottom layers of the population in the future garrison state. If recent advances in pharmacology continue, as we may anticipate, physical means of controlling response can replace symbolic methods. This refers to the use of drugs, not only for temporary orgies of energy on the part of frontline fighters, but in order to deaden the critical function of all who are not held in esteem by the ruling state.

Perhaps we read it and payed little attention.

Gentlemen, if an intruder forced his way into your home, attacked your daughter and forced his way into her body, would you stand idly by and permit this to happen, or would you attempt to stop it? I am certain you will agree that any courageous and honorable father would protect his home and family against any intruder or attacker. If the father killed the attacker in attempting to protect his family, I believe you will also agree that no honest or honorable jury would ever convict that father, rather, they would commend him. I believe it would make no difference to you if that would-be rapist were an official from the public health departments, the medical associations, the dental associations, clubs, organizations, your family physician, or your best friend—you would believe he had gone mad and would attempt to stop him, even if it meant killing him. His position and identity would mean nothing to you at that moment; you would judge alone by his actions, and rightly so.

Now, suppose that instead of using a door or window for entry, an intruder used the public water mains for forcing his way into your home and the mouth and skin for forcing his way into the body. In trying to find a word which will most adequately and accurately describe what we feel is happening by injecting our public water supplies with this most violent poison to all living tissues—flourine—we can find no better word than rape. Perhaps that word is technically incorrect, but some high-sounding opinion from a so-called authority would not change that feeling.

I am certain that you are aware, just as we are, that prisoners in a penitentiary cannot be used for medical experimentation against their wills—at least, not legally. Fluoridation is medical experimentation—and defined as such by the Delaney committee. Why has there been no invocation of the laws which protect us from medical experimentation against our will.

I can think of no other way to invade and sabotage the homes and bodies of trusting, unsuspecting, or protesting citizens except through the public water supplies, can you? Is this not communism, totalitarianism, pure and simple, mass medication or mass treatment through force, deceit, or coercion with total disregard of the dignity of the individual or his health or life?

Mr. George Pracy, superintendent of the San Francisco Water Co., recently stated, that when the extension of the fluoridation program in San Francisco is completed, the water supplies of the Peninsula cities of San Mateo, Burlingame, San Carlos, Belmont, Millbrae, Hillsborough, South San Francisco, Brisbane, Colma, Sharp Park, Vallemar, Pacific Manor, Broadmoor, and some smaller unincorporated areas will also be fluoridated. Furthermore, Mr. Pracy stated that the city government of San Francisco does not intend to obtain permission from those city governments or by a vote of the people

before poisoning their water supplies with fluorides. San Carlos voted against fluoridation 2 years ago. The most recent elections in California on this issue resulted in Livermore rejecting fluoridation and Ukiah also rejecting by a landslide. As George Heard, D. D. S., stated:

It is hellish and un-American to put poison in city water supplies and force citizens to drink it.

Here is an example of poisoning by secrecy and force.

Why has the United States Public Health Service opposed the use of bottled water, tablets, and all alternatives to using the common water supplies for dispensing this violent poison when at least six other methods are available? A year's supply of fluorides for a family of 4 costs but 25 cents. Druggists can dispense fluorides by prescription, for each individual in controlled dosage, something which is utterly impossible if dispensed through the public water supply.

Let us reexamine Dr. Bull's statement:

Sure, fluoridation is wasteful—but, unfortunately, we do not know of any other way of doing * * * them.

Why has there been a complete lack of interest by the United States Public Health Service and the American Medical Association to start any reliable, scientific, verifiable, or repeatable medical investigation of the toxic effects of ingesting water containing sodium fluoride? And why is all such published research discredited or smeared? Why has there been complete silence in all United States Public Health Service "scientific" literature and news items regarding the "brain-washing" aspects of sodium fluoride?

I quote from the Shreveport Journal, Shreveport, La., October 5, 1953:

Dr. Joe D. Nichols, newly elected president of the Tri-State Medical Society, said Sunday in a radio interview here, that he suspected Communist agents of being behind the move to put inorganic fluorine in municipal water systems. Nichols said that endorsement of the fluoridation program by reputable organizations is merely chain reaction. The Lions endorse it, then the Rotary, then the Jaycees, and so on in every community, because they have heard that the others have done it. Communist agents, I have heard, have infiltrated the United States Public Health Service. The United States Public Health Service has mothered this thing and a lot of good doctors have been duped into endorsing it. He added that if Shreveport puts fluorine in its drinking water, he would "either skip the town or bring my own jug of water with me."

That physician dares to tell the truth, but it reaches so few of our citizens.

I quote from H. M. Greene, M. D., from The Reminder of our National Heritage.

Dangers of poison in artificial fluoridation by government are the danger in mass medication by Soviet communism. We require license for doctors, nurses, and druggists to give poison drugs. But, artificial fluoridation, for which there is no antidote, is put in drinking water for children and agents of Malenkov, now at liberty in the United States, can give poison to our children.

Perhaps the reason Dictator Ana Pauker was deposed in Red Rumania was because she "let two cats out of the bag" when she boasted to Princess Ileana of Rumania just how the United States is to be taken over. Princess Ileana's book, I Live Again, quotes Ana Pauker as stating that the take-over will be accomplished by taking over (note—not destroying) of the utilities and by poisoning the water supplies. Could she not be questioned concerning this statement?

Quoting from the Los Angeles Times, January 7, 1954:

Six of nine public utility employees who appeared yesterday before the State senate fact-finding committee on un-American activities here refused to answer questions about Communist Party affiliation on constitutional grounds.

The Daily Palo Alto Times, December 21, 1953, recorded as follows:

Among those receiving the Stalin Peace Prize was Prof. Singh Sokhey, member of the Indian Parliament and Chairman of the World Health Organization's Plague Committee.

Would Prof. Sokhey have received that Communist award if he had not been furthering the cause of Soviet communism? I think not. And I understand our United States Public Health Service cooperates with the World Health Organization.

Quoting from the Springfield Union, February 24, 1954:

Asks help for bills against fluoridation, Representative Gray's measures to be heard in Boston next Tuesday. Mr. Gray was a member of the fluoridation study commission which looked into the question last year. * * * "We know for sure," Mr. Gray said, "that whoever the men, the powers, behind the fluoridation scheme are, a number of them are operating worldwide." He says he has evidence to prove that numbers of citizens of Australia, England, Germany, New Zealand, and Scotland "are fighting the fluoridation scheme as hard as the citizens of Massachusetts and the rest of the United States are fighting it. * * * Certainly," he said, "all those people don't fear and fight without cause, particularly those who have been close enough to the Red menace to recognize the danger signs."

A reading of Dr. Leo Spira's works indicate that medical personnel rarely are able to recognize the effects of trace poisons, including fluorides, and are prone to cover up—blaming other causes.

Only those we trust implicitly can betray us. Three whole professions—the medical, dental, and public health—stand indicted, because the few who control those organizations are, we feel, either uninformed, misinformed, dishonest, or subversive. Into which category do they belong?

The several hundred thousand people living in the guinea pig cities of Grand Rapids, Mich., Newburgh, N. Y., and Sheboygan, Wis., can answer for all time what really happens when human beings ingest a steady dose of sodium fluoridated water for a number of years. We have the qualified and honorable scientists necessary to conduct such an investigation—Dr. Leo Spira, Dr. Paul Manning, Dr. Charles Brusch, Dr. Alfred Taylor, Prof. H. V. Smith, and Dr. Margaret Smith, from the University of Arizona, and others.

The citizens and taxpayers of this Nation, I am certain, want such an investigation, though it may cost millions of dollars. What is money in comparison to the health, life, or security of the Nation?

To date, a half dozen or so decisions favoring fluoridation and one against, have been given.

Judge James U. Galloway, of the district court of Shreveport, La., ruled fluoridation illegal, stating tooth decay is not a matter of public health, but one of individual concern.

A sweeping decision favoring fluoridation, was handed down October 22, 1953, by Judge Joseph A. Artl, of the common pleas court of Cleveland. Judge Artl ruled that a—

person's constitutional right to treat his health as he deems best, and of parents to raise their children as they deem best and to be free from medical experimentation and to exercise freedom of religion are all subordinated to the common good. That children's dental health is properly a providence of community laws.

Does this sound like the decision from a judge of the United States of America—or a totalitarian America?

That decision means: We have just abolished the Constitution of the United States; all the divine rights of free men, as clearly stated in our Declaration of Independence, our God-given Constitution with the Bill of Rights—all the unalienable rights endowed by our Creator, the right to say what is done to one's own body, the right to worship God as one chooses—all this is destroyed now. From now one, we have no right to a body as healthy as God bestowed, no right to a brain undimmed and unimpaired, no right to bring forth children as healthy and intelligent as the Creator intended. We are setting up classes in disrespect of the American form of government—a ruling class and a slave class. Sufficient years of forced feeding of sodium fluorides and the change is complete—moronic, atheistic slaves, the direct result of sodium fluoridation and ruled by a superior, intelligent few. Even our unborn children cannot escape this direct assault.

Fantastic, unbelievable, impossible, you say? Think again.

The only time anyone must legally submit to compulsory medication, under our American form of government, is when there is the danger of an epidemic or emergency of a contagious or infectious disease. Dental caries are not now, and never can be, honestly classified as contagious or infectious.

I quote from the San Francisco Examiner, February 27, 1954:

> Brown O. K.'s fluorides. Municipal water districts may add fluorides to their water supplies to protect the health of consumers, Attorney General Edmund G. Brown ruled yesterday. Approval of the State board of health is required, however, Brown said in an opinion requested by Assemblyman Francis Dunn, Jr., of Oakland. Districts and their employees are free from legal liability in the practice unless negligence is involved, he said. The opinion held that there was no need for an amendment to the health and safety code for permission to add fluorides.

Quoting from the Oakland Tribune, April 22, 1954, Mr. Louis J. Breuner, president of the board of the East Bay Municipal Utility District, stated:

> We feel the attorney general's opinion is an opinion of the law, but it wouldn't hold up in court. It does not take us off the hook.

Section 20703 of the Health and Safety Code of the State of California, defines fluorides soluble in water as poison.

Section 20751 makes it unlawful to vend, sell, give away, or furnish, either directly or indirectly, any poison enumerated in section 20703 without a poison label.

Section 26286.5 forbids the advertisement of a drug or device represented to have effect on dental caries.

San Francisco's city attorney, Dion Holm, ruled fluoridation legal.

A Massachusetts brewery, prosecuted under the Federal Food, Drug and Cosmetic Act, criminal proceedings, was fined $100,000 for having a small amount of fluoride in its beer. The court ruled fluorine a nonnutritive, deleterious substance; the quantity was irrelevant.

The law does not apply to cities fluoridating, the Federal Security Agency ruled.

What good is Congress—or the State legislatures—if the laws that they pass to protect us are abolished by those who, perhaps, have other plans?

We need a law which specifically prohibits the poisoning of our water supplies with fluorides and one which will protect citizens from medical or surgical experimentation without their written consent.

Quoting from the San Francisco News, February 23, 1954:

ST. PAUL, MINN.—The President of the American Dental Association said today the use of fluoridated water has cut the rate of dental decay among children by as much as 65 percent. Dr. Leslie Fitzgerald of Dubuque, Iowa, told 5,000 delegates to the Minnesota Dental Association convention here that 910 American communities, with populations totaling nearly 17 million, now add fluorides to their drinking water * * *. The evidence continues to demonstrate that fluoridation will have no untoward effect on the general health and will significantly improve health through the reduction of dental decay.

Quoting Francis Bull, D. D. S., from his address at their convention:

When they take us at our own word they make awful liars out of us.

Fortunately, ever-increasing numbers of citizens are learning the truth—that the proponents are, by their own words "awful liars" and protect themselves in the poisoned cities by purchasing unpoisoned bottled water.

I have stated repeatedly—and I reiterate—that anyone who has anything to do for fluoridation, is displaying a treacherous attitude for one of four reasons—either because he is uninformed, misinformed, dishonest, or subversive. Unquestionably, practically everything in this Nation is infiltrated by Communists, subversives, and their dupes or tools.

Seventeen million Americans, more or less, at the mercy of Soviet Communists. Invasion and sabotage, by remote control, through the water mains. What could be more clever or effective? Our enemies take over—city by city.

I know that fluoridation is a Communist scheme—frankly, the master plan—but I cannot prove it, for those who have informed me, cannot testify—they would be liquidated, if they did. I believe you are in a position to prove it, however, by having Princess Ileana and others testify under oath.

The catalyzing of water fluoridation is being successful and millions of American are being poisoned. I also believe that a Federal law should be quickly passed to prohibit this scheme, in order to avert further diseasing and perhaps killings of our innocent and protesting citizens—and to prevent the complete loss of faith in this administration which so many are experiencing.

Enlightened and aroused citizens are demanding that his hellish and un-American program be stopped—recent examples of what is taking place on the fluoridation battlefront, as reported from La-Crosse, Wis., April 6, 1954, fluoridation was rejected by a 10,623 to 2,356 vote. Cincinnati rejected by 20,000 votes, and the city councils of Akron, Ohio, and Fort Worth, Tex., deemed it advisable to rescind their former action to fluoridate.

To you, gentlemen, I throw the torch—the torch of divine justice, individual dignity and liberty under law—our light to the rest of the world, the hope of all mankind. Be yours and hold it high and you will help to usher in the dawn of the new age—peace on earth, good will to men.

Thank you, gentlemen, for this privilege and honor. I leave our constitutional Republic under your loyal protection, now that we have given you the facts.

The CHAIRMAN. Mrs. Franzen, we appreciate your having come a long distance to present your views to this committee. We realize that you have spoken with sincerity and that you are convinced as to the right of your cause or you would not have come as far as you have and you would not have spoken with the positiveness that you have. We appreciate your having been here, and assure you that your statement will be given our very careful consideration.

Mrs. FRANZEN. Thank you, Mr. Chairman.

I forgot to state that there are approximately, I would say, 100,000 people—there were 90,000 votes against it in San Francisco and they had but one side, and that was the pro side.

I am speaking here not representing the committee, but thousands of people who have asked me to come down and represent them, as they feel it, and fight it out on our battlefront.

The CHAIRMAN. I wish they could have been here and heard you, and the manner in which you have spoken in their behalf.

Mrs. FRANZEN. Thank you.

STATEMENT OF MISS LILLIAN VAN DE VERE, PRESIDENT OF THE CITIZENS' COMMITTEE AGAINST FLUORIDATION, AND CONNECTICUT PURE WATER ASSOCIATION, HARTFORD, CONN.

Miss VAN DE VERE. Mr. Chairman and gentlemen, thank you for giving me this privilege of coming here to speak my little piece. I will make it as brief as possible.

I am a laboratory research scientist, trained at the College of Physicians and Surgeons; refresher course at Harvard, Thorndyke, Mass. I have been doing anaphylaxis research for Prof. Hanz Zinsser, professor of Bacteriology, College of Physicians and Surgeons, and later at Harvard.

I am a registered bacteriologist, New York State. By civil-service examination I was appointed research bacteriologist and assistant in pathology, New York Health Department; also by civil-service examination appointed microbiologist, serologist, Hartford State Health Department; member of the American Public Health Association; Connecticut Public Health Association; World Health Organization; American Association for the Advancement of Science. I am coauthor of a cancer research article published in the New York State Medical Journal, have done fluoridation research with Prof. I. M. Adler at the College of Physicians and Surgeons.

Dr. William H. Park, director of public health laboratories, New York City, advised me as to the shortest method of attaining my objective. He said, "If you do not ever intend to practice medicine, but want to do research work exclusively, you will lose a good many years on academic studies which will in no way train you for the work you want to do. There are plenty of doctors but not enough research workers. You can get special courses in various laboratory techniques which you will need, at the College of Physicians and Surgeons." I was accepted as a special student and took all the laboratory courses. More recently I completed a refresher course in hematology (blood studies) at Thorndike Memorial (Harvard). I passed a civil-service examination for research bacteriologist and I was the only woman who passed the examination in histology. My marks were about 90.

I did laboratory research work with Drs. I. M. Adler and M. J. Sittenfield at the College of Physicians and Surgeons. We had just completed our fluoride research work when I was appointed by the Civil Service Commission as bacteriologist, etc. Later I became a registered bacteriologist by the New York State Board of Health. For many years I did laboratory research and routine laboratory tests in private laboratories and hospitals. My duties included bacteriology-serology-biochemistry-clinical pathology, and tissue work. An article in the New York Medical Journal (about spring 1932) reports a study in cancer research by Dr. George Wyeth and I am coauthor.

Through a civil-service examination I was appointed as microbiologist-serologist for the Connecticut State Health Department. I left there when I became ill. I am recovering from a bus crash injury.

I am a member of the American Public Health Association, Connecticut Public Health Association, World Health Organization, American Association for the Advancement of Science, and the Society American Bacteriologists. I keep abreast of current achievements in laboratory research by attending nearly all scientific meetings.

I have written a textbook on fluoridation for which I have had requests from dental colleges. My book is not yet published. It is in the Library of Congress.

I submitted two antifluoridation bills in the Connecticut Legislature last year which I believe helped defeat the profluoridation bills.

Our prime purposes for this research work was an attempt to find a substance which might retard the onset of arteriosclerosis (hardening of the arteries). We had tried many reagents, with no success. Finally we thought that perhaps a very weak solution of sodium fluoride might be effective since we know the specific affinity of fluorine for calcium, inasmuch as arteriosclerosis is characterized by calcium deposits on the internal walls of blood vessels, we proceeded as follows:

For 30 days animals were fattened and observed by routine tests. Then the experiment began. White rats, 1½ to 2 years of age. Food: cracked corn, oats, beef suet. Distilled water for controls. Fluoridated water contained sodium fluoride, 10 parts per million, 5 parts per million, and 1 part per million. Period of experiment up to 9 months. Inverted bottles with medicine droppers, rubber tubing with pinchcocks insured consumption and no waste. Each day, amount of food and water consumed was measured and recorded. Daily bloodsmears (by snipping end of rats' tails) and blood coagulation time were checked. Those rats which lived the longest, about 7 to 9 months, showed marked emaciation; loss of hair; calcareous deposits in aorta, and generalized hardening of blood vessels; hemorrhagic areas in liver, long bones (femur) were chalky in appearance; bone marrow contained fluoride crystals, kidneys showed cloudy swelling; bloodsmears showed increased polymorphs (white cells) and blood clotting time increased as compared with control rats' blood—(distilled water) and some few developed long chalky tusks. Control animals, sacrificed—showed no pathology except varying degrees of adiposis.

Observation: Instead of retarding onset of arteriosclerosis it seemed to be accelerated. Repeated experiments corroborated these findings.

In the next set of experiments with white rats which had cancer transplants (from Dr. Woglam and Francis Carter Wood of Columbia

University) we used distilled water for control animals, and fluoridated water, containing 10 parts per million, 5 parts per million, and 1 part per million, sodium fluoride on the experimental batch. Results showed more rapid growth of neoplasm (cancer) in the rats which drank the fluoridated water in all dilutions; with metastasis more generalized. Testicular cancer grew most rapidly, the intraperitoneal-x growth was not as fast. Cancerous growth developed faster and larger than in the control rats which drank distilled water. Some of the rats which drank fluoridated water died after 2 months; others developed marked emaciation until death.

Conclusion:

Experiment I. Onset of arteriosclerosis was hastened by ingestion of sodium fluoride; blood-clotting time was prolonged.

Experiment II. Cancer growth was accelerated by ingestion of sodium fluoride.

COMMENTS ON FLUORIDATION BY PROPONENTS OF FLUORIDATION

Francis Heyroth, M. D., December 1952, Journal APHA:

Toxicological evidence in the fluoridation of public water supplies: "Any toxic hazard that may be associated with fluoridation could be only that of the cumulative action of small amounts taken daily over a long period of time. Variations in susceptibility would make hazardous any attempt to predict the maximum safe human intake. Like other biological functions, the ability to store or excrete fluorides may be expected to vary from individual to individual.

M. F. Schafer, M. D., public health officer, Colorado Springs, Colo.:

In order to prevent dental fluorosis we are advising that our water be diluted 50 percent with nonfluodidated water which is available at our dairies. (January 14, 1952, communication.)

Geo. S. Bratton, impact of municipal water fluoridation on foods and beverages, April 1953:

It is the responsibility of the nutritionist to help build good teeth; it is the responsibility of the dentist to help prevent dental decay, but it is definitely not the duty of the water companies to practice preventive medicine or dentistry, or nutrition. Water containing 1 part per million, after boiling may contain as much as 35 parts per million or more of fluorides.

Fred S. McKay, D. D. S., Colorado Springs:

The study of mottled enamel—summary and conclusions: The structure of the enamel is determined only during the period of calcification and not thereafter (up to about age 8 years). Fish is one of the richest sources of natural fluoride. It is, therefore, a matter of good nutrition and preventive dentistry and medicine to include fish in the diets of all children up to 8 or 10 years of age. Fluorine is present in a great many foods, but fish and tea contain the largest amount. The usual foods eaten daily supply about 0.3 to 0.9 milligrams fluoride (McClure).

(Fluoridation has never been determined as a necessary element in human nutrition.)

H. Trendley Dean (private communication):

Reliable evidence must be available that the proposed fluoridating agent will not be injurious to health even when ingested as part of the daily diet over a period of many years. With chemical additives to food on the increase, the importance of that criterion cannot be overemphasized. (Journal ADA, February 1952.)

Zoller Dental Clinic, University of Chicago:

Article deals with germ-free technique. There is no dental decay in the absence of microbic life—

in other words, a clean mouth is the answer to prevention of dental decay.

Practicing dentists' viewpoint on fluoridation:

Many dentists regard fluoridation with skepticism, opposition, and indifference. Dietary and nutritional habits, proper use of toothbrush, reduction in intake of refined starches and sugars have been demonstrated to be good preventive methods which can be recommended to patients. These are in the same category as fluoridation of municipal water supplies.

F. A. Bull, D. D. S., Madison, Wis.:

Fluoridation of communal water supply does not solve the problem of dental decay; nothing could be further from the truth. It will take 14 years before dental caries reduction is brought about in children, and even after fluoridation has been carried on for a long time, one-third of dental caries (dental decay) will still exist. It is by no means a complete answer to the dental health problem.

Cost of fluoridation of the Hartford Metropolitan District Water Commission will be about a quarter-million dollars. In the fourth annual conference, Dental and Public Health, Washington, D. C., "Cost is about $50 per capita." Hazard to operator: He must wear mask, goggles, breathing apparatus, dust collector, air filter, rubber gloves, rubber apron, and so forth. No insurance company will give coverage. Nobody will take responsibility for personal injury or death. Health department says, "We only recommend it." The water company says, "We are only acting as agents, instructed to add the fluoride chemical."

Report of ad hoc committee on fluoridation of water supplies, National Research Council, Washington, D. C. An impartial report presented for professional, governmental, and civil groups who must make decisions for their communities:

Summary and conclusions:

The most sensitive indication in interference with normal calcification of teeth, and is esthetically undesirable. The level of fluoride concentration in drinking water which causes this varies with the individual susceptibility and with the amount of water consumed. How much reduction in dental decay will vary with local conditions.

About one-half of the population of the United States lives in small villages and rural areas and have no communal water.

Harold Hodges—Rochester:

Other ways to use fluorides for dental caries: Topical applications to teeth, tooth pastes, and powders, mouthwash, fluoride chewing gum, vitamins with fluorine. A possible future danger of mottled teeth lies in overenthusiasm to prevent dental caries—people will take fluoride tablets, and they will eat foods which have a high natural fluoride content, such as fish and tea. Conclusions: Persons drinking communal water supplies containing about 1 part per million of fluorine and by eating foods which contain fluorine may bring about a fluorine level, sufficient to cause mottled teeth.

H. V. Smith, Arizona:

Evidence strongly indicates that any water with a fluorine content of 0.9 parts per million or over is dangerous from the standpoint of probable damage to teeth.

Dr. Badger, New Mexico:

Mottled enamel in children drinking water containing 0.9 parts per million fluorine. To cover up mottled teeth, a dentist can make porcelain jackets, crowns, or even full dentures may be required.

In St. David, Ariz., most natives at age 24 years wear full dentures. Natural fluoride in water contains less than 1 part per million fluoride.

American Medical Association: Testimony under oath, congressional investigation, 1952:

American Medical Association does not urge or recommend fluoridation of public water supplies.

Newburgh, N. Y., experiment station, Dr. David Ast, dental surgeon:

Final conclusions cannot be made at this time. It will require an additional 10 years of study to determine cumulative effects of fluorides in the body.

Grand Rapids, Mich.:

A report from the United States Public Health Service, Bureau of Vital Statistics: After 4 years fluoridation of public water supplies, deaths increased from heart disease, almost 100 percent, deaths increased from kidney disease, 50 percent, deaths increased from brain diseases 50 percent.

The population increased 8 percent. Does this sound like a recommendation for fluoridation?

J. C. Muhler and W. G. Schafer, department of chemistry and School of Dentistry, Indiana University:

Decreased thyroid activity is related to increased caries susceptibility in the rat. Dessicated thyroid reduces the incidence of dental caries to the same degree as sodium fluoride alone.

FLUOROSED TEETH EXHIBIT

Gentlemen, I would like to submit this exhibit for your inspection. These teeth came from natives from Aurora, Ill., where they have a natural fluoride concentration of 1 to 2 parts per million, which is considered as an ideal about of fluoride. Proponents of fluoridation state that when water contains fluoride especially in the concentration of 1 part per million, children will not have cavities in their teeth—that only about 10 percent of children will have mottled teeth and this is only a pearly whiteness, or perhaps a little yellowish coloring—and, of course, this is prominent discoloration.

Gentlemen, these teeth, I must reiterate, came from natives of an area where the so-called ideal fluoride concentration is naturally present in their water. You see cavities of many and varied sizes, some large enough for a caterpillar to crawl into; you see also teeth which are crushed and broken off—many filled—and as for mottling, and discoloration, it ranges from a yellowish brown, which resembles nicotine stains, to a dark mahogany, red brown color.

This is the usual thing for those who cannot afford to buy bottled spring water.

Mr. Chairman and gentlemen of the committee, I have here a letter from Dr. L. D. Parnell, Wichita Falls, Tex. He says:

I operate a clinical laboratory where we run a great number of blood tests for syphilis.

We found that we could not use the city water even after it had been distilled three times in connection with these tests.

We received an opinion from a technician formerly with the State health department, advising us that it was probably due to the sodium fluoride in the city water.

I immediately procured rainwater, and the tests came out perfectly.

Mr. Chairman and gentlemen of the committee:

1. In my animal experiments with fluoridation of drinking water at the College of Physicians and Surgeons we found marked pathology in the internal organs of the animals. There were hardening of blood vessels, cancer-experimental animals developed cancer growth more rapidly and blood clotting time was prolonged.

2. Human experiments with fluoridated water at Brantford, Ontario, after a few years, shows twice as much dental decay as at the beginning of the experiment. The United States Bureau of Vital Statistics shows: in Grand Rapids, Mich., after 4 years of fluoridation there was almost 100 percent increase in death from heart disease, 50 percent increase in death from kidney disease, and 50 percent increase in death from intracranial disease (brain disease). The population increased only 8 percent.

3. In fluoridation experiments at Newburgh, N. Y., premature births showed 3 times as much fluoride in the placentas as in adjacent areas which have not fluoridation.

4. There are a large number of premature births in the Southwest areas (which have natural fluorine), as for example, in New Mexico, per 100,000 population there are 55.9 premature births as compared with the entire New England area which has only 2.4, and has no natural fluoride in the water (this report is from the Bureau of Vital Statistics, 1948). Drs. H. V. and C. Smith, fluoride in the blood stream interferes with calcification of unerupted teeth. Tappeiner shows cases on record that ingestion of small amounts of fluoride is fatal to man and other animals. In the 6 months experiment with rats, fluoride in small amounts caused enlargement of thyroid glands.

5. In the Southwest areas most people drink bottled spring water at the advice of doctors, dentists, and health officers.

6. About 300 communities have voted against fluoridation. The following communities have thrown it out after using fluoridation for from 4 months to 2 years: Plymouth, Shewano, and Stevens Point, Wis.; Mount Dora, Fla., and over 300 others.

7. The following organizations have not given unqualified approval of fluoridation of public water supplies: the American Dental Association, the American Medical Association, and the Hartford County Medical Society. They endorsed fluoridation "in principle only" ("in principle," means that it may have some value for laboratory experimental work but not in practice, for use in public water supplies). Congressional Record, March 1952, Dr. Lull, secretary and general manager of the AMA, testifies under oath that they did not urge nor recommend that fluoridation be used in any public water supply.

8. Fluoride mixing machines have frequent breakdowns so that when more than 1 part per million fluoride is delivered there is no taste nor odor to warn us of the error. This has happened at New Britain, Southbury Training School, Northampton, Mass., and it was reported in the American City Magazine of November 1951 which describes continual disruption of service due to the corrosive nature of fluorides.

9. There is no such thing as a "safe" amount of fluoride, due to the individual's biological variations. Some children show dental fluorosis with as little as 2 tenths of 1 part per million of fluoride. The fluoridation program urges using five times that amount.

The chemical sodium fluoride cannot be either assimilated or eliminated, but it is stored in the body. Fluoride attacks the kidneys causing backaches. Fluoride combines with calcium of the bone and is found as crystals stored in the hollow portion where the bone marrow is normally present. The best teeth are found where there is no fluoride in the water. Dental fluorosis is an external manifestation of pathological changes in other parts of the body. The so-called benefits in Southwest areas are not due to the fluoride in water but to the increased mineral content of the soil. Artificial fluoridation is not necessary, as practically all foods we eat contain some natural fluorine which is easily assimilated by the body.

10. Prolonged or repeated ingestion of any drug, in unknown quantities, without proper medical supervision and without due regard to the physical condition of each individual, is extremely dangerous. Fluoride, in particular, being a deadly poison, proven by medical and chemical research, is potentially productive of dire results on the human body.

At the present stage of the fluoride experimentation, it is proven that safer and better methods can accomplish such benefits as are claimed for children's teeth. It is mass medication, human experimentation, enfringement of constitutional rights, and an entering wedge to socialized medicine.

11. Chlorination and fluoridation can in no way be compared, as chlorination treats water to make it safe from harmful bacteria, while fluoridation treats the body, making it mass medication. Boiling chlorinated water removes the chlorine but boiling fluoridated water increases the potency of the fluoride chemical.

12. Mass medication is socialized dentistry, forcing dental care upon each and every human being, whether we have teeth or not, or whether we need or want dental care or not, we would be compelled to drink a solution of fluoride, the most powerful, the most dangerous element known to man, for which there is no known remedy.

13. Fluoridation interferes with home medication.

14. Artificial fluoridation can be accomplished for those who want it by the addition of tablets or drops, by topical application and by using bottled fluoridated water which any health department would be glad to furnish free of charge to homes and schools, for those parents who want it for their children.

15. Fluoridation at best might possibly benefit some, not all children up to age 8. Many of these children would gain no benefits whatsoever; some will suffer harmful effects, while a small minority of these children would not be affected either way if they enjoy very excellent nutrition. The only true benefit to be derived from fluoridation is its antiseptic quality as a mouth wash which can so well be obtained by rinsing the mouth with any other antiseptic solution. Those over age 8 would derive no benefit at all.

16. Governor Dewey of New York vetoed fluoridation. The Hastings Law Journal, spring 1952, proves fluoridation to be illegal. It is a violation of our Federal Constitution, article I and amendments 1 and 14 thereto.

17. Fluoridation deprives us of our personal liberties, and violates freedom of personal care of one's own body.

18. To force fluoridation down unwilling throats is not the American way. Every human being and domestic animal would be coerced into drinking fluoridated water making a veritable fluoride storehouse of our bodies.

19. The health and safety code refuses the right to any department of health to force compulsory dental examination or service.

20. Dental caries (decay) creates no epidemic or emergency of a contagious or infectious disease, therefore, there is no "clear and present danger" at all, and therefore no Public Health police power need be invoked.

21. Consequently, it must stand that fluoridation of public water is unconstitutional and is in violation of State laws and the Federal Constitution.

22. If the State wants to make fluoridated water available to children, to partially prevent dental caries, fluoridated bottled water can be placed in the schools and homes of children for those who want it. The conflict would then be resolved and at a cheaper price moneywise, as well as from the standpoint of infringement upon individual rights.

23. Scientists, now engaged in this research work, state that it will require 20 years to a life span before these experiments can give any meaningful results. Only the uninformed and the misinformed want fluoridation.

24. For the preservation of good health and the welfare of our total population do not sanction fluridation of public water supplies.

25. Pass the bill, H. R. 2341.

26. Allow bottled fluoridated water to be made available to those who want it, thus permitting us all to have freedom of choice.

I have a resolution of the Citizens Committee Against Fluoridation and the Connecticut Pure Water Association that I would like to present.

Mr. HESELTON. It will be made a part of the record.

(The resolution referred to is as follows:)

RESOLUTION AGAINST FLUORIDATION OF PUBLIC WATER SUPPLIES

Whereas fluoridation of public water supplies is in contravention of constitutional rights; and

Whereas fluoridation is a potential danger from sabotage or defective equipment; and

Whereas fluoridation coerces mass medication on entire populations; and

Whereas fluoridation is proven to be a cumulative poison, destructive to body enzymes, and a protoplasmic poison; and

Whereas individual biological variation precludes possibility of a "safe" amount of fluoride; and

Whereas science does not yet have a sufficiently delicate analytical technique to detect with certainty what is called subclinical injury; and

Whereas fluoridation is not necessary for healthy tooth formation and has never been proven necessary to maintain proper functioning of any body tissue; and

Whereas various bureaus endorse fluoridation but do not guarantee (assume responsibility for) its safety; and

Whereas fluoridation may jeopardize the health of the nation; and

Whereas fluoridation is economically unsound because water consumed for drinking and cooking constitutes only 1 percent of total amount of water used; and

Whereas fluoridated bottled water can be made available to individuals by local health departments, or by capsules, tables, etc.: Therefore be it

Resolved, That no attempt shall be made to tamper with the public drinking water other than for the purpose of purification; and we are unequivocally opposed to the addition of any fluoride to any public water supply.

CITIZENS COMMITTEE AGAINST FLUORIDATION,
THE CONNECTICUT PURE WATER ASSOCIATION,
LILLIAN VAN DE VERE, *President*.

Mr. HESELTON. Your 15 minutes have expired.

Miss VAN DE VERE. Thank you, Mr. Chairman.

Mr. HESELTON. On behalf of the committee, I want to express our appreciation of your coming here and presenting the results of your extended studies.

The committee has gone 15 minutes beyond the ordinary time for adjournment and there are other matters that the members of the committee have to attend to before leaving tonight, so we will adjourn until 10 o'clock tomorrow morning.

I would suggest this, however, that those who have not spoken, might well confer together and see if they will not be able to so arrange their statements that they will be able to stay within the time available. That is from 10 o'clock in the morning, until 12 o'clock noon.

Then, the opponents will start their presentation at 2 o'clock in the afternoon, if we can obtain permission of the House to sit.

(Miss Van de Vere submitted the following statement for the record:)

STATEMENT OF MISS VAN DE VERE

1. Newburgh and Grand Rapids Fluoridation Experiment Stations show statistics which prove that by age 17 to 18 years, fluoridated water aggravates dental decay, so that there is far more dental decay evident in those children who have used fluoridated water than in the children who have used water without fluoride.

2. Knowing that fluoride attacks nerve cells (animal experimentation proves mental retardation among rats which were fed fluoridated water, Representative A. L. Miller's report—Congressional fluoridation investigation, 1952), is it any wonder that there is evidence of marked intracranial (means within the brain) disease among Grand Rapids residents? Fluoride is an insidious poison which works slowly but surely in its devastating effect and impairment of physiological processes.

3. The most recent report on dental decay in Science magazine of May 14, 1954 (by Joseph C. Muhler and William G. Schafer), published by the American Association for Advancement of Science, states, "Decreased thyroid activity is related to increased caries (dental decay) (susceptibility) in the rat. Desiccated thyroid reduces the incidence of dental decay to the same degree as sodium fluoride alone." This observation bears out more strongly that dental decay is not due to a lack or shortage of fluorine in the diet or in the teeth.

4. A communication from Dr. Prothro, public health officer of Grand Rapids, Mich., in 1952 stated that he is chairman of the heart committee and he is far more interested in reducing deaths from heart disease than in reducing dental decay in children, and if there is any scientific information which could be made available to him, it would be appreciated. In response to this request I sent a letter to Dr. Prothro, in which I stated the following information—which may explain why fluoride could be the cause of so many deaths from heart disease. My reasoning is this: We know that fluoride has a powerful affinity for calcium, and we know that, because of this, tetany (muscle cramp) in legs or arms is frequently observed, due to a calcium deficiency. Now transfer this reasoning of the muscle cramp (which occurs in legs and arms) to a similar muscle cramp which occurs in the heart (heart is a large muscle) and we have the reason for increase in deaths from heart disease in areas where water is artificially fluoridated. Residents from Grand Rapids and other fluoridated areas told us that their people come home from work, mention that they feel

very tired, and drop dead. Gentlemen, this is a situation which should no longer be allowed to continue!

5. With all this scientific data aside, going on to another aspect of the fluoridation program. It is the unprecedented behavior of our local public health officials in Hartford, who removed and hid the antifluoridation exhibits from thet Union Railroad Station (Hartford, Conn.) which had attracted tremendous crowds of people. The Hartford Health Department exhibited their profluoridation display in the railroad station, bank lobbies, theaters, PTA meetings, public-health meetings, and the Municipal Building. Yet, after permission from the New Haven Railroad manager was granted to show the antifluoridation exhibit, they were removed, without permission, by the Hartford Health Department officers, hidden away for days, without notice to anyone connected with anti-fluoridation, though my name and address were clearly written on each part of each exhibit. They also removed the antifluoridation exhibit from our public library. When I appealed to our city manager, Carleton Sharpe, he said, "It is customary for the city manager to stand behind the heads of departments whom he appoints, and I shall not interfere with the activities of the health department. Sorry, nothing can be done." He also refused to allow our anti-fluoridation exhibit in the Municipal Building lobby, though he allowed the profluoridation exhibits for a long time. This was during the period when our Connecticut Legislature was in session in 1953. However, I must give full credit and appreciation to our Governor, John Lodge, who was fair enough to allow both the pro and the antifluoridation exhibits to be displayed in our State Capitol during the period when our legislature was considering some bills on fluoridation. How is one to interpret such openly antagonistic behavior by the Hartford Health Department? I tell you this, gentlemen, that you may know that fluoridation is more than a scientific venture or a medical program.

More recently, our Public Health Dentist Menczer sent information across the country that our Hartford City Council favors fluoridation, when the truth is that Hartford city councilmen voted against fluoridation of public water supplies—6 to 2 (corporation council's letter in committee files). Then, on February 10, 1954, this same Public Health Dentist Menczer was about to give a talk on fluoridation of public water supplies to a club of young mothers at the public health building. He sent for Police Officer Lee because I and an assistant were distributing antifluoridation fliers, together with a flier from the United States Department of Agriculture, which information states that good food makes good health and good teeth. The complaint against me was that I was distributing "offensive literature." We continued to distribute these in the public health lobby to the club members as they arrived. The public health dentist continued to berate us and pleaded with the club members to return the fliers to me and not read them. Needless to say, none were returned, but were placed in their bags for future reading. The police could find nothing "offensive" about the material which we distributed and he told us that the antifluoridationists might go up to the meeting. Officer Lee told him that this is a public building, that the lecture is public health, and the dentist is a city employee. Dentist Menczer forbid us to attend. We went to the police building for advice. There was unanimous opinion among all the detectives and patrolmen on duty that we cannot be barred from that meeting. They urged us to attend. When we returned at about 10 p. m. the building was in darkness and the door locked. Next day we learned that the meeting was not over until 11:30 p. m., that Dentist Menczer locked the door and extinguished the hall lights to keep us out.

In March 1954 Jaycees in Bristol, Conn., planned a closed meeting on fluoridation of public water supplies, to be attended only by the city councilmen, the water commissioners, and the unit of public health experts—(public health officer, public health dentist, public health sanitary engineer (who plans the technical details for installation of fluoridating machinery)—and public health profluoridation speakers.

After a tremendous struggle and final intervention in our behalf by a retired chief justice, whose contention was that every resident who drinks the public water should have a right to attend such a meeting, to know what is planned to put into his water supply, and that the invitees should be permitted to hear both sides of such a controversial subject. The meeting, at the last moment, was opened to the public, but there was no opposition allowed to be voiced, no discussion allowed from the floor. The only questions answered were by written

request, and then only proponents of fluoridation were answered. The Jaycees had been asked to sign a request for fluoridation, many months ago, by the State board of health; before they had heard anything for or against fluoridation, and they acceded because the board of health asked that they should. So it was with the CIO, many PTA's and other organizations, who have implicit faith in the health department and would not question their activities.

This whole thing is an exact duplicate of what the Hartford Health Department did all last year, when they discontinued open debates and forums on fluoridation. (This was on the advice of United States Public Health Service as reported in the excerpts of fourth conference public health, dental association, and child welfare.) Is this the American way? Countless radio programs carried profluoridation propaganda, but our public health officials did not allow the program directors to permit antifluoride programs. They made many desperate efforts to prevent my TV panel of Dr. Leo Spira, M. D., Dr. Ginns, D. M. D., and Dr. Robert H. Mick, D. M. D., all practicing doctors, and myself, from going on WNHC–TV (New Haven). However, this TV program director stood his ground because he had given the profluoridation public health officials twice as much time about a year before, and opponents of fluoridation had been requesting, by petitions and individually, for free equal time. Now we are having a repetition of this situation on another network. Why is the public health afraid to let the public hear or read anything against fluoridation? Are they engaged in thought control as well?

6. These are statement of facts. I respectfully submit this information that you may know something of the background which accompanies this forceful effort of the public health to fluoridate our public water supplies.

7. A little over a year ago I had a very violent allergic reaction from drinking two cupfulls of coffee in a fluoriated area. Immediately upon finishing the second cupful, which was about 15 or 20 minutes after the first cupful of black coffee, I got violent cramps, felt nauseated, suffered excruciating pain. The room began to spin around, so that I clutched the table where I had been drinking coffee. My eyes immediately swelled shut, also my lips. My tongue became swollen and looked like a golf ball. I could not speak for hours. My face became yellow and swollen to three times its usual size, then large blisters, the size and shape of big peanuts appeared on the lower part of my face. After about 2 days, these blisters broke and there was a violent gush of clear fluid. It happened suddenly and with such force that it took all the skin off my face and throat. I was left with bare red flesh, pouring large quantities of clear fluid. The burning, itching, tingling sensation was more than a human being could bear. I was in extreme agony, night and day, unable to sleep, with pins and needles sensation along the underside of my forearms from elbow to and including the little finger and ring finger and constant, terrific headache. The M. D. who attended me had never seen such a case before, and declared that it looked like a violent arsenic poisoning. After about 7 weeks of struggling with this baffling illness, I went to an allergist. He, too, was unable to make a diagnosis at that time. He tried everything until he found a way to help me and skin began to grow on my face and throat. During this entire siege I had become allergic to many things, including tobacco smoke (I don't smoke). During this time and even now, about 18 months since the fluoride poisoning, my hair has been falling out by the handful. The definite diagnosis has now been made. Others have had similar experiences. I do not know whether, on that day, the fluoride mixing machine went out of control (this happened often), or whether the coffee had been simmering for a long time, thereby increasing the concentration of fluoride. Should anything so hazardous as fluoride be allowed as an addition to any public water supply?

During our brief visit to Washington, D. C., some of us used pure spring water from a local bottling company and avoided any food which was cooked in water. Those of my colleagues who tossed caution to the wind suffered terrific cramps, diarrhea, and headache. That is the usual reaction of the body to the first ingestion of fluoridated water. Then they had to carry a one-half gallon jugful of the pure spring water with them, as it became necessary to flush and dilute the poison. Large quantities of milk gave some relief, as it replaced the calcium which is immediately attacked by the fluoride. Middle-aged and older people suffer most; also the chronically ill, as well as the malnourished children and adults.

Gentlemen, it is as much a crime to allow fluoridating of public water supplies as it is to allow a maniac to run loose and discharge firearms. Nobody knows who is going to get hurt or who may die as a result of it. May I therefore respectfully implore you to pass H. R. 2341 and set us all free from this abomination which has come to our country?

If your thinking should lead you to believe that passage of this bill, H. R. 2341, would interfere with States' rights, please, gentlemen, consider, for example, murder. That is not allowed in any State. Therefore, to prevent murder, or any other thing which could cause harm to any human body should be considered in the same light. Passage of this bill would not deprive any individual from the use of fluoride in any form, but it would prevent dire effects upon others if forced to accept it.

(Thereupon, at 4:50 p. m., the committee adjourned to meet at 10 a. m., the following day, Wednesday, May 26, 1954.)

FLUORIDATION OF WATER

WEDNESDAY, MAY 26, 1954

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D. C.

The committee met, at 10 a. m., pursuant to adjournment, in room 1334, New House Office Building, Hon. Charles A. Wolverton (chairman) presiding.

The CHAIRMAN. The committee will please come to order.

STATEMENT OF HON. GEORGE S. LONG, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF LOUISIANA

The CHAIRMAN. I see our colleague, Representative Long, of Louisiana, is present. Is it your desire to be heard, Dr. Long?

Mr. LONG. Yes, sir, Mr. Chairman.

The CHAIRMAN. Are you for or against the bill?

Mr. LONG. Against it.

The CHAIRMAN. We have been hearing and expected to hear this morning, the continuation of the proponents. However, we do make exceptions in the case of Members of Congress, because of the fact that they have other duties to perform in other committees. So we will hear you, even though we have allotted this time to the proponents. The clerk will please take due note of the time Mr. Long uses, so that the proponents will likewise be recognized for the same time.

Mr. LONG. Thank you very kindly, Mr. Chairman.

First, I want to thank the committee and the chairman for the privilege of appearing here this morning. I have a prepared statement that I would like to submit for the record, and then to discuss from that prepared statement briefly, in order to save you as much time as I can.

The CHAIRMAN. You may do so.

Mr. LONG. I want to take but a minute of your time this morning to express myself as opposed to H. R. 2341. I have practiced dentistry for more than half a century. During that time, I have seen many mouths ravaged by decay, decay which could have been largely prevented had the benefits of our present-day knowledge of how to adjust the fluorine content of water supplies been available to them.

As a dentist, I have been interested in the development of this precentive device. I have studied the scientific articles relating to it and I am convinced that it is absolutely safe and that it will help to reduce dental decay.

I suppose you are familiar with the amount of money spent each year by the Federal Government for dental services to servicemen, to

veterans, and to beneficiaries of the United States Public Health Service. Last year it amounted to more than $100 million. As a dentist, I know that a large part of this expenditure is caused by the tremendous number of cavities found in the mouths of these people.

If all had been able to drink fluoridated water during their early youth, they would have been saved an immense amount of suffering and the Federal Government would have been saved a tremendous amount of money.

I would like to say also that I am opposed to those features of this bill which would encroach on State and local rights of self-determination. I don't think that it is the business of the Federal Government in Washington to tell the people of my home city of Pineville, La., whether or not they should drink fluoridated water.

I don't think that the people of Louisiana would like the Federal Government to tell our State legislature that it cannot pass a law authorizing community water fluoridation if it deems such a law wise. And furthermore, I don't think that the Congress has a constitutional right to take such action.

Consequently, gentlemen, I recommend to you that you defeat this bill leaving to the several States the right to decide whether or not fluoridation is good for their people. If you do, I think as a practicing dentist, that time will show that the benefits of this nutrient will, in the not-too-distant future, be available to most of the children who drink water from community supplies, and that the resultant decrease in the amount of tooth decay will be both a health and an economic benefit to this country.

I just want to take a few minutes of time this morning to express my opposition to H. R. 2341.

I have practiced dentistry for more than half a century. During that time I have seen many mouths, and I have been engaged in much research work. I have used a great deal of my time as a practicing dentist in helping in research, to try to find some of the cures for some of the things that have beset mankind in the way of decay and diseases of the mouth.

I have used up a great deal of time and not only been interested in watching, but have been interested myself in research, in taking the actual patient, giving some of them fluorine and not giving it to others, and it has been my studied opinion that the fluorine has been very helpful, and I am very much surprised to see that some men who are learned men would take an opposite view of this splendid work.

I can only say that it has been helpful in my own practice and it has done much good, and I know of no place where fluorine has injured any person for having used it in the water.

But, may I make the statement that my opposition to this amendment is from the State rights proposition. I would not like to have the United States Government come into my little town of Pineville and say, "You cannot put fluorine in the water," after the chemists, the doctors, the scientists, have said that it would be good to be used on our children's teeth in that manner.

I think this is a matter to be settled by the various States and various communities, and I do not believe, in my humble opinion, that it has any business in the Congress of the United States.

Much time and much money has been spent by our Government on research. Nothing is more crippling and disfiguring than decayed teeth. Nothing has caused more ill health than trouble with decayed teeth, in my humble opinion, and that is after 50 years of hard work and study.

Anything that will help to have better teeth and less decay is of great value.

You might ask me why the dentists are so interested in this. My answer back to you would be, if you would multiply the number of dentists by 10 that are now practicing dentistry and, all of the children and all of the people should suddenly have money enough to have teeth fixed, in the next 10 years you still would not have made a start on the job, in reducing the amount of decay in existence. And, it starts with children early in life and they go through their life without having teeth enough to masticate their food properly, and their life is shortened by a number of years and their happiness is shortened a great deal.

We will be a happier people whenever we reach that point that we can listen to the scientific people and the people who are working with chemistry, in the interest of the human race, and we will be better off when we have more faith in them, and place our faith in the men who are handling the dental proposition and the other propositions that we have to contend with, so far as medicine is concerned.

I thank you for this opportunity, Mr. Chairman.

The CHAIRMAN. Are there any questions?

Dr. Long, we appreciate your appearance today and the statement that you have made, which is based upon your long experience in the practice of dentistry.

Dr. LONG. That is right.

The CHAIRMAN. I can assure you that the testimony that you have given will have the very careful consideration of the members of this committee.

Dr. LONG. Thank you, sir.

The CHAIRMAN. And, your statement will be made a part of the record.

Dr. LONG. Thank you, Mr. Chairman.

The CHAIRMAN. Dr. Long consumed 5 minutes. Is Senator Hunt present?

The CLERK. He is on his way.

The CHAIRMAN. I have statements for the record from Lt. Col. Robert J. H. Mick, of the United States Army Medical Corps, now serving in Germany. Colonel Mick is a resident of the congressional district which I represent. His home is at Laurel Springs, N. J.

You can readily understand that the statement which has been submitted by Colonel Mick is not in any way to be considered as a statement of the viewpoint of the Army Medical Corps. It is solely and entirely his individual thought.

He had hoped that he would be present. I had assured him he would be given an opportunity to testify when these hearings were held. That was prior to his entrance into the Army.

Recently, when he entered the Army he was sent to Germany. He had hoped to be able to get permission to return in order to testify,

but as that has not been possible, he has sent to us his prepared statement.

He has requested that it be made a part of the record and, I will see that it is made a part of the record.

In addition to that, he also sent a tape recording of his views, which would take approximately 45 minutes, if that were given. Of course, there is not time for that. His entire statement will be made a part of the record.

(Someone from the audience asked if he was for or against the bill.)

The CHAIRMAN. He is in favor of the bill, and very strongly in favor of it.

It would have been very helpful to have had the benefit of the testimony of Dr. Mick, because I know of my own personal knowledge, that for a long period of time he has worked as zealously in his study of this particular problem. His convictions, which are very strong, have risen as a result of that long and careful study, and experimentation with rats and mice and whatnot.

(The matter submitted by Dr. Mick is as follows:)

FIFTH GENERAL HOSPITAL,
Bad Cannstatt, Germany,
A. P. O. 154, New York, N. Y.

HON. CHARLES E. WOLVERTON,
Chairman, Committee on Interstate and Foreign Commerce on Subject of Fluoridation of Water, 3136 House Office Building, Washington, D. C.

DEAR MR. WOLVERTON: I trust that above committee hearing testimonies of fluoridation of water will allocate sufficient time to listen to part II of my tape recordings. This part of tape deals with the mechanical relationship of quality of teeth to waters. Sufficient copies of mimeographed "following" sheets should be available to committee.

Part III of tape covers many of the reported harms on animals and animal experimentation from presence of fluorine.

Part I of tape covers part of the story on how certain groups or representatives of such groups have used their influence to keep the public and professional men misinformed, including letters to me. Such groups include New Jersey and Kansas Public Health Service, New Jersey State Dental Society, and the Surgeon General's Office of the United States (Department of the Army) and the United States Public Health Service.

Attached hereto are evidence against the use of fluorine, including photographs with explanations of experimental animals. This will disprove the value of artificial fluoridation of water and will also show the long-term harmful effects of same. This series is sheet No. 1. (Filed with committee.)

Sheet No. 2 contains photographs and explanations of fallacies (1) of protection from dental decay in area, today, where fluorine is naturally in the drinking water; and (2) of the lack of need of any fluorine at all in drinking water, as shown by the United States Public Health Service. This latter part is also covered in tape II. (Filed with committee.)

Yours sincerely,

ROBERT J. H. MICK
Dr. Robert J. H. Mick,
(Lieutenant Colonel, USAR DC) D. D. S., Laurel Springs, N. J.

P. S. Have enclosed hectographed copy of tape II with complete set of following mimeographs.

WORDING OF TAPE NO. 2 OF DR. ROBERT J. H. MICK, LAUREL SPRINGS, N. J.

My name is Doctor Robert J. H. Mick, of Laurel Springs, N. J. Inasmuch as I am now a lieutenant-colonel in the United States Army the opinions and assertions here are mine and not to be construed as that of the Army or the armed service at large. This presentation begins with the date that the town without a toothache received its national and international publicity and of how the original misinterpretations of statistics originated two fallacious

stories; first, that of a direct relationship of better teeth being found in some areas having fluorine in the drinking water, and second, the presence of fluorine in the drinking water of some areas being responsible for tooth decay in an inverse relationship to the percentage of parts per million of fluorine found. But let us go back and see how the story of fluorine really got started. We'll take from the February issue of 1943 of the Reader's Digest, the story of the town without a toothache, of which many of you may be familiar—I will read in part because it is so important:

THE TOWN WITHOUT A TOOTHACHE

J. D. Ratcliff

(Condensed from Collier's, December 19, 1952)

A hopeful approach toward finding the cause and cure of the most prevalent of all human ailments—dental decay—has been made by shy little Dr. George W. Heard of Hereford, Deaf Smith County, Tex. Now 75 years old, Dr. Heard moved to Texas from Alabama 26 years ago and started to practice dentistry there.

Almost from the start he noticed that there was virtually no tooth decay among old residents. New settlers might need an occasional filling. Gum and bone infections would sometimes necessitate an extraction or platework. But there were none of the fillings that make up the bulk of the average dentist's work.

This absence of decay puzzled Dr. Heard. He questioned old-timers. "Never thought about it," they said. Funny thing, though, they added, you could bring spindly fishbone cattle up from Mexico, graze them for awhile, and they'd turn into fine big-boned animals. And horses in the county had fine teeth. Even one old dog around town, 16 years old, still had all his teeth.

For years Dr. Heard went along looking for decay—and hardly ever finding it. For years at dental meetings he tried to interest somebody in this strange business. Finally he buttonholed Dr. Edward Taylor, able, hard-driving State dental officer. Taylor drove through the county, picked houses at random, introduced himself, and asked if he could examine the family's teeth. Among 56 people, of whom 43 were native born, varying in age from 2 to past 60, Dr. Taylor couldn't find a single cavity.

Subsequently an examination of 810 Hereford school children revealed that well over half had no decay whatsoever. Each child was graded on a basis of decayed, missing, or filled teeth—DMF—in dental parlance. Average figures showed one DMF per child. Elsewhere it would have been from 5 to 10 per child.

Another striking fact turned up. In people who had moved to Deaf Smith County in the last half-dozen years, evidence of old decays were found but the process had stopped. In many cases the floors of old cavities had acquired a hard, glazed surface.

To determine the cause of this fantastic low rate of decay, peculiar to a small region in and around Hereford, research men first investigated the drinking water, which proved to contain 2.5 parts of fluorides per million parts of water. But fluorine alone wasn't the answer. In another Texas town with exactly the same concentration of fluorides, the decay rate, though low, was more than twice the rate at Hereford.

Fieldmen gathered samples of meat, milk, wheat and vegetables, for analysis at Texas Technological College. Almost from the outset one fact stood out clearly: the foods were astonishingly high in phosphorous, probably the most vital of all soil minerals. Carrots contained 50 percent more than usual, turnip greens 30 percent, cabbage and lettuce 60 percent. Meat and milk were similarly high in phosphorous. Wheat, the chief food product, ran 600 percent above normal. Calcium content also was high.

Foods grown in Deaf Smith County probably obtain their superabundance of phosphorous from the soft, porus caliche rock which underlies the area. Roots dip down into this spongy rock for mineral nourishment.

Whether phosphorous alone is responsible, no one yet is prepared to say. Research men elsewhere have noted that rats fed high phosphorous diet have unusually good teeth. Fish is one of the richest sources of phosphorous, and anthropologists have found that decay is rare among primitive, fish-eating peo-

ple. Over large areas of the earth, bad farming has mined out this vital mineral. Cattle grazed on such land fail to mature properly, human beings become sterile. It seems possible that tooth decay is merely the first outcropping of phosphorous deficiency.

Dr. Taylor is inclined to ascribe the low rate in Deaf Smith County to fluorides, sunshine, and calcium, as well as to phosphorous. Evaluating the part each plays is a job of considerable proportions—a job for a trained research group, armed with money and talent. Forward-thinking dentists realize their inability to cope with the problem of decay. Most people haven't enough money to buy proper dental care, and if they had there wouldn't be enough dentists to supply it. What is needed is more fundamental work on the causes; and this research in Deaf Smith County has opened the door for it.

The original investigators never said that fluorine was the cause of better than normal teeth. But it was Dr. Taylor, Dr. Ast, Dr. McKay and all the other sponsors who started the fluorine story and who have since tried to save face, that have perpetrated this story. Let me continue. This original story was the story of Dr. George Heard, back in 1941. But let me read to you a little note of March 11, 1954, in which he says, "this fluorine craze is not correct. I am sure if another survey is made of Hereford the findings would be very different because the food there is different. The pictures in my book reveal this fact. There are families of children here who have no caries and there are families here who have plenty of caries. There are families here where the children are different. Some have caries and some none. The difference is in the food intake. The mouth reveals the type of food consumed." The sponsors of fluoridation would have you believe there is an inverse relationship between the amount of fluorine in the water and the amount of dental decay that is present in the mouth, and they continue with such misinformation, publishing it in all the newspapers and articles, such as in the Kansas City Star, Thursday, December 31, 1953 and also again in the Kansas City Star Monday, January 11, 1954. Incidentally, Kansas City studied the story of fluorine for over 5 years. They turned it down in December of 1953. Let us assume that 1 or 1½ parts per million of fluorine added to water as the sponsors have told you, or recommended, will stop dental decay or will give better teeth, then, will the sponsors lead you to believe that you can add just this recommended amount to distilled water, and your children drink this type of water and have the beautiful teeth that you expect? Will they guarantee there will be less dental decay, or will the same sponsors lead you to believe that you can drink the cola drinks or soft drinks and having used a city water, of 1½ parts per million of fluorine mixed with it and that your children will develop good teeth and that they will not develop dental decay. Or, could there be some other factors in these waters as in Hereford, Tex.? You remember it has the same amount of fluorine in the water as the town 50 miles away but the town 50 miles away had twice as many cavities. This is not the only place where this phenomenon has taken place, and I will come to it. Or shall we go back to Amarillo, Tex., which is a neighbor to Hereford, Tex. and take their water and take the fluorine out, as is now being done by families that can afford it. They buy machinery and a little equipment that they put in the kitchen to remove the fluorine from the water. It is recommended for such by the physicians, or if you could still further afford it, in Amarillo, Tex., you buy Luzarken water which is advertised free from fluorine." Or should your children drink water as on the American Islands of Samoa to get their beautiful teeth, where the United States Public Health Service did beautiful work in 1950, where no fluorine at all was found in the water. Have you been told that?

Colorado Springs is often used as an example of why fluorine is good, they have approximately 2.6 parts per million of fluorine in their water but you are not told that there is almost 100 percent of mottled enamel either to one extent or to some one degree or another. But Woodstown, N. J., has approximately the same amount of fluorine in their water (2.6 parts per million) but they have practically no signs of fluorosis at all. And there is Faulkland, S. Dak. They have approximately 2.8 to 2.9 parts per million of fluorine in the water which should give the children all mottled enamel, but there is practically no mottled enamel at all, why? Because of something that these men are not telling you that is also found in the water. Or have you been told about Kiowana, Kenya, where the natives and the Indians (the Indians are from India) drink exactly the same water containing the same amount of fluorine in it. The only thing that they have in common is the drinking water. The natives have approxi-

mately the same amount of mottled enamel as the Indians but the natives have approximately 1 percent of their teeth that have any signs at all of minute decay and the Indians have 6 percent, which is 600 percent more. Or, another way of saying it, 10 percent of the natives may have some dental trouble but 40 percent of the Indians have decayed, missing, or filled teeth. That is a difference of 400 percent. There are every type of dental defect amongst these Indians that you could find. But amongst the natives there wasn't even an interproximal cavity. If fluorine was the miracle mineral both the natives and the Indians drinking of the same type of fluorinated water would have had the same protection. Is that not right? But then let us go back and try to find out what is the relationship between water, not fluorine, to good teeth or to bad teeth and let us start with the statistics that were published under the title of "Domestic Water and Dental Caries," April 11, 1941, by the United States Public Health Service. The investigators here were Doctors H. Trendley, Dean, Phillips, Jay, Arnold, and Elvove. This story is on the various cities in Illinois, with which you may be familiar. They are Elmhurst, Maywood, Aurora, Joliet, Elgin, Evanston, Oak Park, and Waukegan, and you are shown that as there is no fluorine in the water of Waukegan, Oak Park, and Evanston, and that 97½ percent, 96 percent, and 96 percent of the individuals examined had decayed, missing, or filled teeth. And where there was 0.4 part per million of fluorine in the water only 88 percent had decayed, missing, or filled teeth, and where there was 1.2 parts per million of fluorine it dropped to 81½ percent to 75 percent and where the fluorine increased to 1.4 parts per million in the water then only 73½ percent had decayed, missing, or filled teeth and at Elmhurst, Ill., where 1.8 parts per million fluorine was in the water 73 percent of the individuals had decayed, missing, or filled teeth. Or you can say it in another way.

That at Elmhurst, Ill., where there is 1.8 parts per million of fluorine in the water that 112 out of 154 examined had some trouble with their teeth and as the fluorine content completely disappeared down to Waukegan that out of 229 examined 223 had decayed, missing, and filled teeth. Or even to make it sound worse, that at Elmhurst, where there was so much fluorine in the water, that there were only 381 with decayed, missing and filled teeth altogether out of all those examined, while at Waukegan the decayed, missing, and filled teeth increased to almost 1,900. On the surface these statistics are absolutely correct but what they didn't tell you is, that as the amount of total solids increased in the drinking water that the amount of dental decay also decreased. Now refer back to these towns and look under the total solids present in the water at Waukegan. There were 155 parts per million total solids (and total solids are all the minerals that are found in your water) though there was no part per million of fluorine and the total solids increased in Elgin to 180 parts per million to Joliet to 566 parts per million, to Aurora and Maywood close to 730 parts per million and in Elmhurst 737 parts per million of total solids in their water. Now just what are total solids? Total solids are the combination of all the solids that are found in your drinking water upon analysis. Let us take for example Laurel Springs, N. J., where the total solids part per million are 100. There, if you took 2 gallons of water and boiled it down you would have a residue of a grayish, yellow material. These are the salts that are in the drinking water. These would weight approximately 18 grains. Now let us go to Woodstown, N. J., where there is 2.6 parts per million of fluorine in the water. There you will find 485 parts per million of total solids. If you boiled 2 gallons of this water down you will get also a grayish, yellow mass a little bit different than that found in Laurel Springs, but you will have 63 grains of these minerals compared to the 18 grains found in Laurel Springs water. Now what does that mean? That means that every time that a child in Woodstown, N. J., takes a glass of water they get approximately four times more minerals per glass of water than a child drinking Laurel Springs' water. Or, say it another way, the children of Laurel Springs would have to get or would have to drink 4 glasses of water to get the same quantity of minerals as those in Woodstown, N. J., and we haven't discussed quality.

Let us assume that you have a form to fill with concrete, concrete being a mixture of water, sand, cement and the other necessary elements. After you've made your mixture you find that you only have half enough cement mixed up. All you have to do is to add sufficient water to double the amount of cement, mix it up and pour it in that form. Eventually it will form a solid mass, but the original minerals will not have been increased and the total strength of the structure will not have been increased either. That is the same way with getting more minerals or less minerals. If your children can get more minerals per glass of water or in their food they have a better chance of having better

bones and better teeth. Let us look at it in a different way on the relationship of this fluorine to possible making of better teeth or the prevention of dental decay. If you are going to build a house you have timbers or structures and they have to be a certain length and certain size. You can build them out of oak or you can build them out of balsam, and they will both be the same size and length but you will not have same strength, the oak being the stronger of the two and the more dense. Now let us assume that you are building them out of oak and that is fine. Along comes the termites and they start to put holes in the oak structure. Now you call in the exterminators. They come in and destroy either the termites or they make the wood so that the termites will not come in it. You still have the holes in the wood, but the strength is not increased. That is the same story with fluorine added to water. You can put in a substance that may be able to stop dental decay, but you do not increase the strength and you do not increase the quality of the original structure. Let us go back to the towns of Illinois. The children in Waukegan in their glass of water drink 155 parts of total solids per million while those in Elmhurst consume 737 parts of total solids per million. The children in Elmhurst only have to drink 1 glass in 5 theoretically, to get the same number of minerals as those in Waukegan, or reverse it. The children of Waukegan have to consume 5 glasses of water to Elmhurst's 1 to get the essential minerals or total solids that make for good bodies and good teeth. If you had a garden or farm and wanted good vegetables you wouldn't put fluorine in the land, you would go out and get minerals—minerals—those essential things that make for better growth so that the animals or human beings eating of the vegetables grown on the soil that is high in minerals will in turn have better nutrition. Some of you may still believe that if my story of total solids was correct the United States Public Health Service would surely come and find out if it were true. But, let me tell you, that is not so.

The United States Public Health Service did commendable research work in 1950 which shows that fluorine is not required at all in the drinking water of anyone to have good teeth and here it is. These are the results of the 1950 survey of the American islands of Samoa, conducted by the United States Public Health Service and presented by Dr. Losee at the 1952 convention of the American Academy of Nutrition and released with the permission of Dr. H. Trendley Dean. Of the 6 islands of the American islands of Samoa the decayed, missing, and filled teeth in 100 vary from 10 in 1 group to 167 in another and those individuals having decayed, missing, and filled teeth vary from 6 in the first group to 49 in the sixth group, and when the water was analyzed there was no fluorine at all. There was no fluorine at all found in 5 sources of water and in the sixth there was 0.2 p. p. m. The conclusions of the United States Public Health Service are: That the teeth get worse as the calcium gets less, as the magnesium gets less, as the chloride gets less, and the total solids get less, as the residue gets less, as the silica gets less, as the dicarbonates get less, and nothing is said about fluorine at all in the relationship to good and the bad teeth. When the sponsors of fluoridation talk about the amount of fluorine in water, make sure whether they are talking about the deep-well tests or whether they are talking about surface water. Because, as in Colorado Springs, water comes from the snow from the high mountains and runs over fluorine-bearing ore, such as bauxite and cryolite, and it will take up a large amount of fluorine. But in all deep wells where fluorine has been found and where the statistics have been gathered, you can find only a certain amount of fluorine, at the most, in proportion to the total solids or the minerals that are present. You can find water that is fairly high in total solids with no fluorine at all but you can never find water that contains fluorine that isn't in a proportionate relationship to the total solids or minerals that are present in the water. The sponsors of fluoridation lead you to believe that urine can be used as a control for toxicity or accumulation of fluorine in the body.

But let us refer again to the figures gathered by the United States Public Health Service on the American islands of Samoa. Here the United States Public Health Service also analyzed the urine of the males and the females for the fluorine content. Upon analysis the males contained from 1.4 parts per million of fluorine in their urine to approximately 0.36. The females ran from 0.4 to 1.58 parts per million of fluorine in their urine. Where did this fluorine come from? They started with no fluorine in the water. It could have come from no other place of course, than the food. So, let us go to Philadelphia. Here also the water contains 0.0 to 0.2 parts per million of fluorine in the water. A man working in Philadelphia and living in Philadelphia, upon analysis, has 1.2 parts per million parts of fluorine in his urine. Where did that came from? Let us go to Woodstown, N. J. Remember, now, we are talking about natural

fluorine in water. Here 1 male specimen excreted 2.3 to 2.6 parts per million fluorine. The second male excreted 2.9 parts per million of fluorine in his urine. No. 1 female excreted 1.2 parts per million and the second female excreted 1.8 parts per million of fluorine in her urine. What happened to the fluorine she started with? She started with 2.6 parts per million of fluorine in her urine. All of these individuals lived in Woodstown under normal conditions. If there can be no control of fluorine found naturally in drinking water how can there be any control for artifically controlled fluorine? Do the bones have an affinity for fluorine? Well let me quote you. In an article in the Journal of the American Water Works Association, in August 1953, entitled "The Fluoridation of Municipal Water Supplies" it is stated "that it has long been known that bone has an affinity for fluoride and that the use of bone was one of the earliest methods suggested for defluoridating water." Do you realize that there have been five plants in the United States today that have attempted to take fluorine out of the water? Also stated in this same article in the Journal of American Water Works Association, "That any water containing over 1½ parts per million of fluorine is considered containing excessive fluoride." The people of Junction City, Kans., were told that the fluorine content of their water was to be raised to one part per million. But at one time they were drinking 1.4 parts per million without their knowledge. In an article in that same Journal of the American Water Works Association entitled "The Affects of Fluoride in North Dakota Water Supplies" by Williams, they concluded that the rate of protective values can be determined for any group using the common water supply, but there will be a lessening of the rate of protection above the ages of 10 to 13, the age increasing with increasing fluoride content. Now we're talking about natural fluorides. They also concluded that some factor or other than the presence of fluoride retards decay between the ages of 8 and 11. This is on page 878 in the August edition. And they conclude finally: "that further investigation should be taken to answer the questions posed by Officer Bacon in the present survey:

First, why does the rate of protection change above a certain age (now we are talking about natural fluorides) and, second, what is the apparent antidecay factor operating between the ages of 8 and 11? The original investigators have bypassed the work that was done and sponsored by the American Dental Association back in 1924–26 and published in the 1926 edition of the Journal of the American Dental Association. This work was done under a grant from the research commission and it is the only work that has even been sponsored and paid for by the American Dental Association. This work was done at the West Texas State Teacher's College under the leadership of Dr. Pierle of Canyon, Tex., and this is the only conclusion that was ever published in a dental magazine on work that was paid for by the American Dental Association. There are three conclusions: First, that it is possible to produce mottling and brown stain in the teeth of animals by lowering the calcium intake below that needed for the growing animal; second, it was also possible to prevent mottling by supplying the calcium requirement of the animal; and, third, the production of good teeth must begin during the gestation period by feeding the mother with sufficient bone- and tooth-forming material to meet all requirements. Folks should know that any city that has a water-softening plant is stealing vital minerals from their children, such as the minerals of calcium and magnesium and the body building bicarbonates which are required for strong teeth and strong bones. They are the minerals that are removed so that the people can have soft water at the expense of good teeth. What are these requirements? The name of Dr. Harold F. Hawkins is familiar to all dentists. He states, "the tooth is composed essentially of lime salts. The enamel is the most important tooth structure in consideration of caries, for if there is no gum recession, the enamel has to be penetrated before the dentine can become involved. The enamel is composed of almost 90 percent tricalcium phosphate and about 10 percent calcium carbonate with traces of magnesium, fluorine, and so forth.

TAPE NO. 2. MECHANICS OF WATER IN RELATIONSHIP TO QUALITY OF TEETH (OR DECAY RESISTANCE) AND DENTAL FLUOROSIS

Dr. Robert J. H. Mick, Laurel Springs, N. J.

(This supplements listening to tape No. 2)

Concerning Hereford, Tex. (See accompanying article "Town Without a Toothache," Reader's Digest, February 1943): It is due to this partial reprint and in turn partial quotes of same, that public was first misinformed (para-

graph of Dr. E. Taylor's, Public Health official) on relationship and importance of fluorine to quality of teeth and dental decay.

Reference: Fluorine content Hereford, Tex., drinking water:
2.5 parts per million.
Dental conditions: Reported by Dr. George Heard;
Dental decay progressively worse on same fluorine water.
1916 (approximately)—Number of cavities among native residence: approximately nil.
Dental decay progressively worse on same fluorine water.
1942—Out of 810 children examined, over one-half had no decay at all.
1954—(March 11) (Letter to Dr. Mick from Dr. George Heard).
(Increase over 1942).
Dental decay progressively worse on same fluorine water.
Same report: Families with no cavities;
Families with plenty of cavities.
1942—Town, with same fluorine content (2.5 p. p. m.), had over twice as much dental decay.

Reference: Which liquid containing fluorine contributes most for better teeth and bodies, less tooth and body disease?

1. Distilled water (mineral free) plus 1 p. p. m. fluorine.
2. Sweetened beverages (Cola, etc.) plus 1 p. p. m. fluorine.
3. Natural waters normally containing 1 p. p. m. fluorine that produces no discoloration of teeth.
   (*a*) Natural waters normally containing 1 p. p. m. fluorine, which causes varied degrees of permanent discoloration of teeth (Arizona), or dilution.
   (*b*) Natural waters normally containing 1 p. p. m. fluorine; but, as reported by Kemp, Wilson & Roberts in their investigations, 64 percent of a group of children (ages 14–17) exhibited ostedchondritis of the spine (Launton, England; 1 p. p. m. fluorine).
   (*c*) Natural waters with 1 p. p. m. fluorine added artificially.
4. Natural waters with higher than recommended fluorine content, the removal of which fluorine is suggested by physicians to prevent permanently discolored teeth (as in Amarillo, Tex.):
   (*a*) Natural waters with high fluorine content where "fluorine free" water is imported to prevent permanently discolored teeth (as in Amarillo, Tex.).
   (*b*) Natural waters with higher than that recommended, causing only disfiguring mottling of teeth of children; but in report of Shortt conclusive evidence is presented that the fluorides are responsible for a high percentage of crippling skeletal manifestations in adults over 30 years old.
5. Waters naturally containing less fluorine than recommended, but capable of causing permanently discolored teeth (Tucson and Chandler, Ariz.).
6. Waters naturally containing 50 to 150 or more fluorine than recommended; but cause no discolored teeth, as in Faulkton, S. Dak., and Arizona.
7. Waters containing approximately 2.6 parts per million fluorine (as Colorado Springs, Colo.) that causes almost 100 percent permanently discolored teeth with higher decay rate after 18 years of age (AWW Journal, August 1954).
8. Waters containing approximately 2.6 parts per million (as in Woodstown, N. J.) with no gross fluorosis (compared to Colorado Springs) with consistent decay-resistant teeth after 18 years of age.
9. Waters containing approximately same fluorine in 2 different towns, 50 miles apart, but where dental decay rate of 1 town is over 100 percent greater than other (as reported in Collier's, December 1942). (Same fluorine content; varied dental decay.)
10. Waters of a town (Kisumu, Kenya) containing fluorine where different groups drinking same water have a difference of 600 percent in number of diseased teeth; and there is a difference of 400 percent in number of children having diseased teeth, although each group had approximately same percentage of discolored teeth. (Same fluorine content; varied dental decay.)
11. Waters of a section (around Ilbissel, Kenya) where all ages of children have 100 percent perfect teeth and no discoloration.
12. Waters containing higher than recommended amount of fluorine, but on varied human food programs can produce both discolored teeth or nondiscolored teeth (as reported ADA Journal, July 1926).
13. Water containing lower than recommended amount of fluorine, but on varied human food programs can produce either opaque, poor-quality teeth, or transparent, high-quality teeth (Mick, 1949–53).

14. Water (same as above) containing lower than recommended amount of fluorine, plus the conditions known to produce fine-quality teeth, but with addition of artificial fluoride to this water produces poor, hollow, blunted teeth, poor bones, a crippled, emaciation, paralysis, and accumulation of up to 500 percent more fluorine in the teeth, bones, livers, kidneys, spleens, than in same type animals drinking same type of water without the artificial addition of fluorine. (Mick.)

15. Waters (reported by U. S. Public Health Service in 1950 in survey of American Islands of Samoa) known to be fluorine-free, which help produce beautiful decay-resistant teeth.

16. Waters containing naturally less fluorine than recommended; a report by Pandit et al., covering 3 years of investigation in areas with fluoride content as low as 0.6 part per million, disclosed symptoms of chronic crippling intoxication in residents of over 15 years.

17. Or is it waters that have been artificially fluorinated for centuries that have produced decay-free teeth in fish and animals; or if children drink the same water as a dog, yet the children develop decayed teeth, and the dog doesn't, can fluorine, added to the water, improve either the dog's teeth or the child's health? (Dental disease is merely the visual appearance of possible accompanying internal disease or degeneration.)

18. Or (back to reference No. 1 on Hereford, Tex.) should more fluorine be added to water known to produce perfect teeth three generations ago, although in 1954 (according to the same Dr. George Heard who reported those decay-free teeth) some of the children living in the same area, drinking of the same water, have many decayed teeth?

Reference: Relationship of presence of fluorine to dental decay—"Domestic Water and Dental Caries"—USPHS

[Figures by H. Trendley Dean, Arnold, and Elvove, Apr. 11 1941]

In Illinois	Parts per million total solids	Parts per million fluorine	Dental experience rate permanent teeth decayed per 100 children	Number examined	Number having decayed, missing, filled teeth	Number of decayed, missing, filled teeth	Percent of decayed, missing, filled teeth
Elmhurst		1.8	252	154	112	387	73.0
Maywood		1.4	258	139	100	352	73.5
Aurora		1.2	281	340	255	957	75.0
Joliet		1.2	323	233	191	785	81.5
Elgin		.4	444	250	223	1,113	89.0
Evanston		0	673	208	200	1,399	96.0
Oak Park		0	722	208	202	1,508	96.0
Waukegan		0	810	229	223	1,891	97.5

Reference: Total solids of Laurel Springs and Woodstown, N. J. (2 gallons of water)

LAUREL SPRINGS	WOODSTOWN
Total solids: 100 parts per million (approximately 18 grains).	Total solids: 485 parts per million (approximately 63 grains).
Fluorine: 0.05 part per million.	Fluorine: 2.6 parts per million.
Fluorine to total solids: 1 to 2,000.	Fluorine to total solids: 20 to 2,000.
Color: Light tan (buff).	Color: Pasty gray.

Parts per million total solids of Laurel Springs to Woodstown: 1 to 4.85.
Parts per million fluorine of Laurel Springs to Woodstown: 1 to 52.
Weights of total solids of Laurel Springs compared to Woodstown: 1 to 3.5.
Glass of Laurel Springs water contains X total solids.
Glass of Woodstown's water contains 4.85X total solids.

Reference: Relationship of quality of water to dental decay—"Domestic Water and Dental Caries"—USPHS

[Figures by H. Trendley Dean, Arnold, and Elvove, Apr. 11, 1941 (now including figures from p. 27)]

In Illinois	Parts per million total solids	Parts per million fluorine	Dental experience rate permanent teeth decayed per 100 children	Number examined	Number having decayed, missing, filled teeth	Number of decayed, missing, filled teeth	Percent of decayed, missing, filled teeth
Elmhurst	737.6	1.8	252	154	112	387	73.0
Maywood	723.2	1.4	258	139	100	352	73.5
Aurora	729.6	1.2	281	340	255	957	75.0
Joliet	566.0	1.2	323	233	191	785	81.5
Elgin	180.0	.4	444	250	223	1,113	89.0
Evanston	153.6	0	673	208	200	1,399	96.0
Oak Park	152.8	0	722	208	202	1,508	96.0
Waukegan	155.2	0	810	229	223	1,891	97.5

Reference: Result of 1950 survey of American islands of Samoa presented by Dr. G. Losee at 1952 convention of American Academy of Nutrition and released with permission of Dr. H. Trendley Dean

Legend c/o DMF teeth	Aoa 0.4	Amouli 1.6	Fagasa 1.7	Pavaiai 4.9	Leone 5.5	Utulei 7.2
DMF in 100	10	36	36	118	125	167
DMF ind in 100	6	18	16	50	39	49
Total dissolved solids (103 C)	164.0	112.0	98.0	72.0	76.0	80.0
Loss on ignition	40.0	24.0	68.0	20.0	24.0	4.0
Fixed residue	124.0	88.0	88.0	52.0	52.0	76.0
Silica (SiO_2)	44.0	36.0	32.0	20.0	24.0	40.0
Iron (Fe)	0.1	0.1	0.1	0.0	0.0	0.7
Aluminum (Al)	0.0	0.0	0.0	0.0	0.0	0.3
Calcium (Ca)	14.3	11.4	8.6	8.6	5.7	2.9
Magnesium (Mg)	9.6	4.4	2.6	2.6	1.7	1.7
Sodium and potassium (calculated as Na)	19.4	6.3	11.0	4.5	8.8	8.0
Carbonate (CO_3)	0.0	0.0	0.0	0.0	0.0	0.0
Bicarbonate (HCO_3)	109.8	36.6	54.9	30.5	40.7	23.2
Sulfate (SO_4)	1.6	1.6	1.6	2.1	1.6	4.9
Nitrate (NO_3)	0.9	0.9	0.7	0.9	0.7	0.4
Chloride (Cl)	20.0	21.5	10.0	8.3	0.0	8.5
Phosphate (PO_4)	0.4	0.4	0.3	0.6	0.3	0.0
Fluorine (F)	0.0	0.2	0.0	0.0	0.0	0.0
Urine analyses:						
Fl male urine	1.41	0.94	0.36	0.46	0.37	0.68
Fl female urine	0.45	0.86	0.50	0.47	1.07	1.58

Common trends:
Teeth get worse.
Calcium gets less.
Magnesium gets less.
Chloride gets less.
Partial trends (getting less): solids, residue, silica, bicarbonate.

Reference: On urine analyses (parts per million fluorine)

American Islands of Samoa (6 sections):
Fluorine content of water: 0.0, 0.2, 0.0, 0.0, 0.0, 0.0.
Fluorine content of urine: Male, 1.41, 0.94, 0.36, 0.46, 0.37, 0.68; female, 0.45, 0.86, 0.50, 0.47, 1.07, 1.58.
Woodstown, N. J.:
Fluorine content of water: 2.6.
Fluorine content of urine: Male, 2.3, 2.9; female, 2.2, 1.8.
Philadelphia, Pa.:
Fluorine content of water: 0.0 to 0.2.
Fluorine content of urine: Male, 1.2.

FIFTH GENERAL HOSPITAL,
APO 154, BAD CANNSTATT, GERMANY,
May 11, 1954.

HON. CHARLES A. WOLVERTON,
Camden, N. J.

DEAR MR. WOLVERTON: Enclosed are five copies of original article that started the fluorine story in high gear. Please attach them to mimeos that go with tape recording. It is here that Dr. Taylor's misinterpretation started.

Your two most important witnesses against fluorine are still living. One is the same Dr. George W. Heard, of Hereford, Tex., and Dr. Chester Pierle, of Canyon, Tex. Dr. Pierle performed the only animal research work sponsored by the American Dental Association. Part of his results were published in July 1926 in ADA Journal. The same men who have since promoted this criminal farce saw and bypassed his findings. The other investigaters that worked with fluorine and published its harmful effects in July 1926 in a dental journal are Margaret Smith, et al., of Arizona (well known). No sponsor of fluoridation (or group) have published the results of one long-term experiment with analysis of body tissues (teeth, bones, kidneys, spleen, livers). I had published the only results of three generations on artificial fluoridation. The United States Army has much on the subject—can be obtained from a Colonel Gordon, Medical Field Service School, Fort Sam Houston, Tex. It has to do with killing rats. Using this particular fluoride compound the Army puts a container of water containing this "tasteless" material in a 20-foot (diameter) circle that is covered with DDT powder. The rats die before they reach the outside of circle and the infected lice that leave the animals are killed by the DDT. It took the Dalare Associates (chemists) 3 months to detect this fluoride compound in dogs even when they knew what they were looking for. It is so potent that not only the animals are killed, but so are the animals that eat of that animal or if a chicken should eat, accidentally, of poisoned food, the animal that eats of that chicken will also die.

It is a lesser degree of destruction from another fluoride compound that the brewers of this country owe their ability to make beer quickly—but animals that eat of these beer slops into which most of the fluoride goes become ill, their body and teeth show the harmful effects, etc. (June 15, 1951), reported by Naval Research, Bethesda, Md. The analyses were conducted by United States Government—the harmful effects reported to animal raisers, not humans.

To just make it illegal or unlawful to allow fluoridation is not the answer—the promoters should be brought to trial and made to prove their past assertions by works—not words. If the long-term bodily permanent harms are as has been shown, then such retribution as possible should be made and such organizations that are sponsoring same (fluoridation) should stand the penalty of their crime. They are now hiding behind the petticoat of "health."

Unfortunately, the fluorides placed in drinking water in recommended amounts will not kill an individual. The harmful effects will show up in the next generation as it does in animals. The effects are permanent. Your loss of physical stamina and manpower will be more affected in the next 20 to 40 years than any war could cause. I know you can't believe it—it would only take 1 year of controlled laboratory experiments to prove it—either by our Government or the sponsoring (ADA, AMA, USPHS) organizations. They have spent millions to try to promote fluoridation and keep the public uninformed. They have spent nothing on learning the facts.

Some day you will be most happy to have had the privilege of being chairman of committee into which this bill was directed.

Most sincerely,

Dr. (Lt. Col.) ROBERT J. H. MICK.

JUNCTION CITY, KANS. (until March 23).
LAUREL SPRINGS, N. J. (April 4 to 14).

A copy of this letter is being sent to you officers and directors of the Odontological Society of Western Pennsylvania. I trust that you will see fit that this is published in your journal so that your members may at least know that there is another side to fluoridation and let them form their own opinions. This letter is in reference to Editor's Notes, by your editor, Dr. Isaac Sissman, and the article by Dr. Gerald Cox, of Pittsburgh, on fluoridation in your February issue.

Inasmuch as I am now a lieutenant colonel in the Dental Corps of the United States Army, the opinions or assertions contained herein are mine and not to

be construed as being official or as reflecting the views of the Department of the Army or the Army service at large.

Both of these gentlemen's writings are a prime example of how to withhold any truthful information and how to continue to misinform and confuse you and the public. The editor has taken it upon himself to criticize the criticism of Dr. Gerald Cox and vehemently waves the flag in his behalf. There is no other man in the world today that has devoted himself to the amount of practical research work on fluorine as has Dr. Dillon (whom Dr. Cox criticizes), and unless you gentlemen are shown the complete series of all of Dr. Dillon's work (published in English dental journals), you, too, will continue to expose yourself to this same type of influence as Dr. Gerald Cox has been exerting on his "gullibles" and uninformed students for some years.

And if Dr. Sissman knew anything (except what he's been told or given to read by such as Dr. Cox) at all on the mechanics of water and its relationship to quality of teeth (not disease prevention), he himself wouldn't be so gullible as to print the resolution of El Paso County Medical Society as further confirming the virtues of this miracle mineral, fluorine. The most important part of this Colorado Springs story isn't being told you. And if your editor knew the story about Dr. Edward Taylor and his questionnaire and what he was trying to cover up and what he has attempted to keep from you, your editor wouldn't print such a statement as, "It is unfortunate that even dental journals resort to spreading fear and doubt, etc.," and, "There are silly charges made by, etc."

I am one of that group making "silly" charges, but with editors such as Dr. Sissman how can they be brought before the bulk of professional men who are supposed to have the intelligence to read all sides of so vital a question as fluoridation and then form their own opinions? Information of this type is distributed at the individual's expense and not by paid employees of some organization. The Journal of American Dental Association's editor said of my own research work, "Very interesting reading, but unsuitable for publication." Public health service representatives of New Jersey and Kansas have used pressure to "hush me up" and keep more of my work from being printed or heard. Of course, when I originally went along with the story, I was a "good fellow."

I congratulate your organization for providing space in a journal for men like Dr. Sissman and Dr. Cox to air their personal views, as neither one presented anything original or constructive. Of course, Dr. Sissman doesn't want space used for any "silly" truthful facts.

I am to speak in Philadelphia Tuesday, April 13, against fluoridation, and will there present such truths as the following: That this whole "fluorine" story could have been built up around one of a half dozen minerals if it hadn't been that fluorine in excess is conspicuous by its mottling effects, and thus was born the "endemic" areas. From here on in the blind research workers could not see and have made no efforts to have their eyes opened. They have been blinded by that brown "fluorine tree" beyond which they cannot see the green forest. Drs. Dean, Ast, Elvove, Arnold, and all the others (Dr. Cox is at head of list; men like Dr. Sissman at bottom) will some day be known for what they are—originally conscientious, fine men who used their professional associations to promote the greatest farce and life-destroying method that has ever been propagated in the name of health. And I will continue to repeat this accusation (which is in hands of all groups accused): "I accuse the United States Public Health Service, the American Medical Association, the American Dental Association, and all groups or individuals sponsoring the artificial fluoridation of water of knowingly or unknowingly misinforming you, the public."

Dr. Robert J. H. Mick.

P. S.—If Dr. Gerald Cox is so sure of himself, have your group arrange for an open forum between him and myself to be held in Philadelphia between April 5 and 14, before I go to Europe with Armed Forces. He has never faced anyone who knew the facts. His refusal will confirm my accusations. Otherwise, at your request, I will criticize, paragraph for paragraph and line for line, Dr. Sissman's editorial and give you the references that you may verify same for yourself.

You all know of the fourth annual conference, State dental directors, with the Public Health Service and the Children's Bureau, which convened in Federal Security Building, Washington, D. C., June 1951, with Dr. John W. Knutson, Chief, Division of Dental Public Health, Public Health Service, and Dr. John T. Fulton, Dental Services, adviser, United States Children's Bureau, as cochairman, presiding. Among leaders attending the conference were Dr. Leonard

Scheele, Surgeon General of the United States Public Health Service; Dr. David Ast; Dr. Fred Wertheimer; Dr. DeCamp; Dr. Glover Jones; and Dr. Bull. It was Dr. Bull's advice: "Now, where dentists do not seem interested (in fluoridation), do not let that stymie you. What we do in a case like this is to arrange for the PTA or some group to ask for some of us to come in and talk about fluoridation. In this way you get in without forcing yourself, and you can build a fire under the dentists. That is promotional work."

Also, "The question of toxicity is on the same order. Lay off it altogether. Just pass it over. 'We know there is absolutely no effect other than decay,' you say, and go on. Don't bring it up yourself." Also, said Dr. Bull, "This toxicity question is a difficult one. I can't give you the answer on it"; and, "So when you get the answer on the question to toxicity, please write me at once, because I would like to know." And he also makes, plus many, many other incriminating statements, "* * * and let me tell you this: The medical audience is the easiest audience in the world to present this (fluoridation) to."

Any man can make a mistake. It takes a truly big man to publicly admit when he's been wrong. But to continue to sponsor a program to save face at the possible expense of the health of future generations should be criminal.

R. J. H. M.

This is a copy of a letter sent to me by Dr. Gerald Cox.

Dr. Robert J. H. Mick.

March 5, 1954.

Dr. Robert J. H. Mick,
8 Grant Drive, Junction City, Kans.

and

Officers and Directors,
Odontological Society of Western Pennsylvania:

Each of you latter has presumably received the mimeographed comment of Dr. Robert J. H. Mick concerning the editorial and my comments on the Dillon article in the November issue of Dental Digest.

We are accused of withholding "truthful information."

The article was written in response to an inquiry from Dr. Ralph Rosen, of St. Louis, and was quite naturally limited to a critical evaluation of the Dillon article. The evaluation was made on the basis of all of Dillon's papers which were available to me. If you will read my comment in the bulletin and Dr. Mick's comment, you will see that he has nothing to say about the facts embodied in the ratios of calcium and fluorine in blood and milk. These, I say, are facts, not opinions, and cannot be overthrown by any statements of opinion, however violent they may be. As Dillon has not given these simple chemical facts, I have concluded that he is not a chemist in the sense of understanding what he does when he uses chemicals and chemical apparatus.

The space available to Drs. Sissman and Rosen in their respective journals did not permit giving all the "truthful information" about fluorine and life. Dr. Sissman even omitted the literature references to save space. However, if you want to see summarizations of the "truthful information" about fluorine and its relation to life, you can find it summarized in The Toxicity of Fluorides in Relation to Their Use in Dentistry, by myself and Harold C. Hodge, of Rochester, N. Y., published in Journal of American Dental Association 40: 440–451, April 1950, and in my chapter, Fluorine and Dental Caries, published on pages 325–414 in A Survey of the Literature of Dental Caries, Publication 225, National Academy of Sciences-National Research Council, Washington, D. C., 567 pages. If any doubt remains in your minds about the fairness of my interpretations of the facts of fluorine in either of these articles, or in any others that I have written, you will find them fully documented. You can, if you care to, get the original articles and see for yourself—in English, German, French, Spanish, and Italian, and including the Scandinavian.

You will note that Dr. Mick uses the technique of suggestion that "the most important part of the Colorado Springs story isn't being told you" and that Dr. Taylor has tried to cover up something. Just what are these facts? Isn't it Dr. Mick who is guilty of withholding something?

During the week of April 13, I will be attending the annual meeting of the Federation of American Societies for Experimental Biology in Atlantic City to

present a paper entitled "Maximum Growth of Suckling Rats." The program is not yet available and so I do not know when I am scheduled to give my report. I have faced Harris, Hurme, Strongin, and Betts in debates, and, as some of you may know from being present, Mick, himself, in an impromptu brawl in the meeting of the Academy of Dentistry of Pittsburgh on Monday, May 26, 1952. If these people don't know the facts, then who does? I heard none of these opponents of fluoridation deal with any facts, based on water containing 1 part per million fluorine, that are adverse to the fluoridation of water.

Dr. Mick has issued the challenge. Is it not my privilege to indicate the weapons? Would he consent to have his speech recorded and then played back immediately for an analysis that seeks the facts? Would time be allowed for full treatment?

Dr. Mick has lifted from context some words from Dr. Bull. The real meaning of Bull's statement is that there are communities, such as Stevens Point and La Crosse, Wis., Seattle, Cincinnati, and Lansing, where the illogical outcries of the opponents have deluded the people. Bull shrugs his shoulders and says, "Let 'em suffer." So the children of these cities can go on with their fluorine deficiencies, but not because of Dr. Bull.

You should read in the cold light of reason the words of the opponents. You will find nothing but sound and fury.

GERALD J. COX,
Professor of Dental Research.

(I wonder if the gentleman present at that Academy of Dentistry's meeting also considered the discussion that Dr. Cox (not myself) sidetracked into the limelight that evening as an impromptu brawl?

(As you remember, Dr. Melvin Page had been invited to present his unusual work on body chemistry. For the mutual benefit of those present, questions should have been directed into that channel. But when Dr. Cox asked Dr. Page what his feelings were on fluoridation, it was at Dr. Page's suggestion (not mine) that any questions from Dr. Cox be directed to me.)

(ROBERT J. H. MICK.)

MARCH 12, 1954.

DR. GERALD COX,
School of Dentistry, University of Pittsburgh,
Pittsburgh, Pa.

DEAR DR. COX: If the Federation of American Societies for Experimental Biology would care to allocate sufficient time on their program or as an extra activity, whereby I may present information, have it recorded, and played back immediately for analysis, as you request, I would only be too glad to accept the challenge. Inasmuch as you have offered to accept the challenge and have "indicated the weapons" of the recording, to which I agree, I think it would simplify my presentation by having you prepare the five most important reasons (or more) why you believe fluorine should be artificially added to drinking water and send them to me by April 7.

If the Federation of American Societies for Experimental Biology do not see fit to allow time for a presentation by me on why and how the sponsors of fluoridation are knowingly or unknowingly misinforming the public, basing presentations as nearly as possible on discussing the reasons submitted by you on why there should be artificial addition of fluorides, then I will still ask you, Dr. Cox, to arrange for an open forum with dentists and physicians invited to be held in Philadelphia. The same conditions stated by your and myself would be the procedures of the program.

Due to the date I am leaving for overseas assignment, the program would have to be arranged between the dates of April 5 and 16, with the exception of Tuesday evening, April 13.

I trust that you will contact the Federation of American Societies for Experimental Biology; that their program chairman, if he so desires, will, in turn, contact me.

In any case, I await your reply of my acceptance to your challenge.

Address until March 28, 1954: 8 Grant Drive, Junction City, Kans.

Address after April 3, 1954: Laurel Springs, N. J. (phone 4-0167).

Most sincerely,

ROBERT J. H. MICK, D. D. S.

The CHAIRMAN. Is Dr. Brusch present?

Dr. BRUSCH. Yes, Mr. Chairman.

The CHAIRMAN. Doctor, are you for or against the legislation?

Dr. BRUSCH. I am for it.

The CHAIRMAN. In support of it?

Dr. BRUSCH. Yes, sir.

The CHAIRMAN. Were you present yesterday when we announced that there would be a limitation of 15 minutes for each witness?

Dr. BRUSCH. No, sir.

The CHAIRMAN. Well, because of the great number who wished to be heard, and the available time being limited, it was necessary to fix a period of 15 minutes for each witness.

Now, if you were not among those witnesses whose names were given to me yesterday and this is an addition, I will have to see how we can work that out. But in view of the fact you are present and you are director of the Cambridge Medical Center, we will see that you have an opportunity to be heard.

Now, are you speaking for the legislation?

Dr. BRUSCH. Yes, sir.

Dr. GINNS. Mr. Chairman, when you called Dr. Brusch's name yesterday I rose to inform you that he could not be here before Wednesday. I believe I made that clear.

The CHAIRMAN. Yes; I remember you did. I had forgotten that for the moment. So that does not create any problem for us to hear him this morning.

STATEMENT OF HON. LESTER C. HUNT, A UNITED STATES SENATOR FROM THE STATE OF WYOMING

The CHAIRMAN. Senator Hunt has just arrived in the committee room.

Senator Hunt is a very busy individual and we will give him the opportunity of testifying at this time.

Senator, are you for or against the bill?

Senator HUNT. I am opposed to the passage of the bill, Mr. Chairman.

The CHAIRMAN. Well, as I said before you came into the room this morning, Senator, we were hearing the proponents of the legislation today, but it is our usual custom to hear Members of Congress, and especially Members of the Senate who dignify our hearings by their presence, we might say, out of turn. So that I will ask the clerk to keep a record of the time that Senator Hunt utilizes and charge it against the opposition.

Senator HUNT. Thank you very kindly, Mr. Chairman. I was not aware of the situation, otherwise I could have been with you earlier this morning. I appreciate a very great deal your consideration.

The CHAIRMAN. You are entitled to be heard.

Senator HUNT. Now, Mr. Chairman and members of the committee, I am here this morning to oppose the enactment of H. R. 2341. As a Member of Congress I am opposed to bills which, to my way of thinking, encroach upon local rights. I think that is one of the effects of this bill. I believe that people in their own communities should have a right to decide for themselves whether or not they wish to have their water supplies fluoridated. It is their children's health

that is involved. If this bill were to be enacted, the Federal Government would be telling States and local communities that they could not add fluorine to their local water supplies. In my judgment, the question of fluoridation of local water supplies is not a Federal question and I would therefore recommend that your committee decide adversely to H. R. 2341.

On the other hand, gentlemen, as a licensed dentist who engaged in private practice for a good many years, 2 years in the Armed Forces and 12 years in private practice—I have a strong professional belief in the benefits to be brought to the public by the adjustment of the fluorine content of public water supplies. I have carefully studied the scientific literature on this subject and have concluded that the procedure is both safe and beneficial.

And, I should like to say, Mr. Chairman, that this was not a problem before the country at the time that I was practicing dentistry. The research work was just starting on this a few years after I graduated from the university.

In my own State of Wyoming, the capital city of Cheyenne has naturally in its water supply a fluoride ion content of about one part per million, the same as is recommended to be added to water-deficient supplies. The people of Cheyenne are justly proud of their healthy teeth, caused in large part by nature's munificence in providing this element of nutrition.

Mr. Chairman, fluoridation of public water supplies has been approved by every scientific society of recognized standing in the field of health. These include the American Dental Association, the dental societies of all 48 States, the District of Columbia, the Commonwealth of Puerto Rico, the Territories of Alaska and Hawaii, and the Canal Zone.

Mr. Chairman, the American Medical Association looks with great favor upon fluoridation of water and I am sure that the recommendation of that great organization carries a lot of weight with reference to health matters before the Congress of the United States.

Also included is the Public Health Service, the American Academy of Pediatrics, the Association of State and Territorial Health Officers, the American Public Health Association, the American Public Welfare Association, the Commission on Chronic Illness, the National Research Council, the American Hospital Association, the American Nurses Association, the Inter Association Committee on Health, the American Waterworks Association, the State and Territorial Dental Directors, the American Society of Dentistry for Children, the American College of Dentists, the dental section of the American Association for the Advancement of Science, and numerous State and county medical societies.

I should like to interpolate, Mr. Chairman, by saying that surely these great scientific organizations with tremendous research facilities at their command would not recommend anything having to do with the health of the people of the United States if they did not believe wholeheartedly in what they were recommending.

On these grounds, therefore, (*a*) That this is a local problem which should be determined locally; (*b*) as a dentist familiar with the prevalence of dental caries who would like to see its incidence diminished by the use of community water fluoridation; and (*c*) because its safety and efficacy has been endorsed by so many eminent scientific associations, I urge you to vote against H. R. 2341.

I am not going, Mr. Chairman, to attempt to overwhelm you with statistics on the prevalence of dental caries nor attempt to say what will be said more effectively and factually, of course, by the scientists who will testify before you. But, I do want to assure you that, as a practicing dentist, I have seen and treated a good many thousands of cavities in teeth.

I have never known a tooth in which decay had begun to get better by itself, or for that matter for the decay process to stop until it was treated by a dentist.

Fluorine added to the water supply will not stop decay which has already begun but it will prevent in future generations the widespread prevalence of dental decay that we know today. It will save eventually, might I say to the committee, literally millions of dollars to those who would in the future need dental care, if the water is not properly fluoridated; but over and above what I have said to the committee, it will prevent suffering; it will prevent malformed bone structure of the oral cavity, due to early loss of permanent teeth, and we will prement many facial distortions. We will be able in so many, many cases to make for a more pleasant appearance of the face, if we do not have the distortion of the oral cavity of the bone structure.

In closing, Mr. Chairman, and gentlemen of the committee, as I walked over here this morning, I passed that wonderful statue placed by the State of Georgia for Dr. Crawford Long who in 1842 first successfully demonstrated the use of sulfuric ether in general anesthesia.

My point is this, Mr. Chairman, at that time certain publications, and from the pulpit, the use of general anesthesia was rather generally condemned.

Prior to that, a few years, Dr. Horace Wells, a dentist, first successfully used nitrous oxide, and then the same hue and cry went up from certain people in the country.

I also definitely remember reading when we first started in our public schools, especially, and even before that, when we were combatting the most, perhaps the most prevalent disease at that time, the disease of smallpox, the vaccination for the prevention of that disease was frowned upon widely and generally and, Mr. Chairman, even down to today there is some opposition to vaccinating our children for smallpox.

I think, Mr. Chairman and gentlemen, that the opposition to the fluoridation of our water supplies today falls to some extent within the same category that I have just mentioned with reference to smallpox and anesthesia.

I thank you, Mr. Chairman and members of the committee for the time you have so generously given me.

The CHAIRMAN. Are there any questions?

Mr. HESELTON. Mr. Chairman.

The CHAIRMAN. Mr. Heselton.

Mr. HESELTON. Senator, you mentioned the fact that Cheyenne's water supply had a natural supply of fluorine. Is it in quantities similar to the quantity that is advocated be placed in waters which are without fluorine?

Senator HUNT. It happens in this particular case to be almost identical; I think exactly the same as is recommended in the fluoridation of water, which is about one part per million.

Mr. Heselton. Has there been any effort to try to defluoridate, if that is the proper term, to try to get the fluorine out of the water?

Senator Hunt. I have never heard of it, sir.

Mr. Heselton. Is the existence of natural fluorine rather widespread in Wyoming?

Senator Hunt. Yes; and some situation, I would say to the gentleman, that, of course, you can have ill effects from too much fluorine in the water. I happen to have practiced in one of those areas, a mountain community, where many of the teeth of the patients I took care of, or treated their teeth, there was overfluoridation of water, which is not beneficial to the teeth. But, of course, the amount of fluorine that is put in our waters today is naturally very carefully and scientifically handled, so that there is no danger from that angle.

The Chairman. Any further questions, gentlemen? If not, we thank you, Senator, for your appearance before our committee this morning and, by way of confirming the statement that you have made as to the viewpoint of the American Dental Society and the American Medical Society, in the several State organizations, I would say that we have received many statements confirming what you have said from those different organizations, and the American Dental Society has witnesses here today to testify in opposition to the bill.

Senator Hunt. Thank you.

Mr. Priest. Mr. Chairman.

The Chairman. Mr. Priest.

Mr. Priest. Senator, I appreciate your statement this morning. I know you have been greatly interested in public-health matters of all types since you have been a Member of the Senate.

I simply want to make a very, very brief observation, because I feel it is appropriate at this place.

You stated that millions of dollars might be saved to the people of the country insofar as dental bills are concerned if fluoridation of water is permitted, provided, of course, that the people want it in the local communities.

The dental societies that have opposed this bill—and I think most of them have, including the national association— have been enthusiastic in their approval of the practice of fluoridation of water.

I think that they deserve a great deal of credit for a very unselfish attitude in that respect, because the millions of dollars, of course, if you look at it from that viewpoint, the millions of dollars that the public might save, on the estimates that have been made, are millions of dollars that otherwise might be fees for dental services.

I feel that the American Dental Association deserves a pat on the back, if I might put it that way, for what appears to me at least to be a most unselfish attitude; an attitude that is in the public interest; and I wanted to make that point a matter of record while you, as a representative of the profession and a Member of the Senate, are present before the committee.

Senator Hunt. Might I just add to the statement that you have made, by saying that the most widely spread, the most prevalent of all diseases are dental diseases, and as you gentlemen well know, in World War II especially, the greatest number of men who were found ineligible for the draft were found to be so due to dental conditions.

Thank you, Mr. Chairman.

The Chairman. Thank you, Senator.

STATEMENT OF DR. CHARLES A. BRUSCH, B. S., M. D., DIRECTOR, CAMBRIDGE MEDICAL CENTER, BOSTON, MASS.

The CHAIRMAN. Our next witness will be Dr. Brusch. Dr. Brusch, I note from a copy of your statement which has been presented to me that it is a very worthwhile statement; but would take considerable time to give in its entirety. For that reason I call to your attention the limitation of 15 minutes for witnesses, so that you may utilize that time to the best advantage in whatever way you see fit. You may proceed.

Dr. BRUSCH. Mr. Chairman and gentlemen of the committee, those who engage in the controversy that exists today on the fluoridation of communal water supplies must take into consideration the fact that fluorides are divided into two classes—natural, and inorganic or artificial.

Organic fluorides, such as calcium fluoride, or calcium phosphofluorides, are found in our daily foods and in drinking water in some areas. They are not readily soluble, and they do not dissolve readily in solution. Calcium fluoride 0.0016 gram per 100 cubic centimeters of water is the solubility.

It appears that in areas where there is naturally fluoridated water the individuals develop a certain amount of immunity to this water because the calcium fluoride here is found in company with other minerals.

When drinking artificially fluoridated water, such as sodium fluoride, this immunity seems to be lost. Calcium fluoride is held together by covalent bonds which gives it a certain chemical property.

On the other hand, the artificial, or inorganic, sodium fluoride is a highly toxic, protoplasmic poison, freely soluble. The amount that is soluble is 4 grams per 10 0cubic centimeters of water. This sodium fluoride is generally a byproduct of bauxite. If we break down fluoride, we find that it contains sodium 54.76 percent and fluoride 45.24 percent. Artificial sodium fluoride is very readily ionizable and diffuses readily in solution.

The difference is apparent. The first is a natural product, calcium fluoride, which is held together by covalent bonds, and not very soluble. Artificial fluoride is inorganic, readily soluble, contains no covalent bonds; 1 part per million contains 0.25 miligram of hydrofluoric acid to the glass of water.

INDIVIDUAL VARIATION

Individual variations run as high as several hundred percent in susceptibility to medication, foods, chemicals, drugs, and so forth. Since sodium fluoride is a protoplasmic poison affecting every cell in the body depending to an extent on the cells' carbohydrate demand.

Each system is affected in a different way, for example, the skeletal, the muscular, the vascular, the nervous, the circulatory, perspiratory, gastrointestinal, genitourinary tract, and reproductive organs.

Whether as air, liquid, or solid, the amount and method by which it is taken into the system is of great importance, as fluorides are used in practically every industry, such as glassmaking, tanneries, bleach-

eries, rubber works, varnish making, plastics, emory wheels, flux, and so forth.

In air it is taken into the respiratory tract as dust or fumes. As a liquid it is taken in by beverages, milk, fluids and liquid; as solids, in foods, vegetables, and fruits that have been sprayed or crops raised in a highly fluoridated area or fertilizers which contain high percentages of fluorine.

In highly fluoridated areas, such as Texas and New Mexico, crops that are grown there and shipped to this area are found to contain large quantities of fluorine. When boiled and cooked in water artificially fluoridated, their fluorine content is greatly increased.

For instance, if the water is 1 part per million, it becomes in 20 minutes' boiling 2 parts per million. Such food as oatmeal, cereals, and so on, will absorb that additional concentration of artificial fluorides in addition to their own original high content of fluorine.

The concentration is of importance because the greater the amount taken in, the greater amount is absorbed to a certain level. The duration of time it stays in the system is also a factor in the amount that is absorbed by the system. The factors are in pH of the media is acid in the blood or in GI system, more of the fluoride is absorbed.

If the fluoride is taken in with slow-absorbing food or with calcium, minerals, and vitamins, such as B1, B2, or B6, less of the fluoride is absorbed. If the system, at the time the fluoride is taken in, has a low calcium or mineral content, more of it is absorbed.

AGE IS IMPORTANT

Age of the individual is important because an infant or child with growing connected tissue absorbs more than an adult or senile person. The sex of the individual is a factor. Females or individuals of a high metabolism absorb more than males or those with normal metabolism. People with a high temperature, such as those with a fever, absorb more.

People with fevers and healthy people have different reactions. Sufferers from chronic diseases, like rheumatic fever, diabetes, heart condition, kidney trouble, and blood conditions, would absorb more.

The weather, humidity, heat or cold, must be considered. The warmer the day, the greater the amount ingested. Change in weather conditions bring about a like change in the reservoir where the artificially fluoridated water is stored.

Again, the action of radioactive substances, the rays, such as cosmic rays, rays from the chemicals themselves, must be taken into consideration.

The diet and nutritional makeup of an individual is another factor. Sodium fluoride has greater effect on the poorly nourished person who lacks calcium and minerals and vitamins, for they absorb more of NaF_2 (sodium fluoride).

In autopsies performed on normal and abnormal individuals there is a very minute difference.

	Normal	Abnormal
Brain	0.6	1.6
Heart	1.6	2.6
Blood	3.5	3.6
Kidneys	4.5	4.6

This shows that it is a problem of activity, rather than of concentration.

ESSENTIAL PARTS OF THE BODY AFFECTED

Essential parts of the body affected are:

1. Calcium, minerals, connective tissues, bones.
2. Enzymes, vitamins.
3. Cells, endocrine glands.
4. Metabolism, of carbohydrates, of proteins, and of fats.

When the sodium fluoride is taken into the system, it is absorbed in the upper part of the small intestine, and is carried by the blood stream to the different cells, organs or tissues in the form of calcium fluoride, robbing the system of calcium.

At the cell some of it may enter the cell or remain on the outside of it as an insoluble precipitate, affecting the feeding and the breathing of the cell. As a result, the cell may lose some of its functions or it may die. Some of the calcium fluoride is carried to the connective tissues and bones and here it is stored. Some of it is excreted through that gastrointestinal tract, some through the urinary tract, some through the perspiration, and one-tenth part is excreted through the salivary glands.

We find that, if there is a deficiency of calcium in the system, it will join up with other minerals, displacing them from their essential use, disrupting their function.

The femur bone contains 15 times more calcium fluoride than any other part of the body.

On the enzymes we find that it joins up with metallic portion of the enzyme which is made up of vitamins and proteins. By so doing, it nullifies their action. Some of the enzymes affected are endolase phosphatase, lipase. We find that 1 part per 15 million will reduce the action of the enzyme, lipase, 50 percent. It affects enzymes adenosine triphosphate.

It prevents the absorption or assimilation of vitamins B_1, B_2, and B_6, and it prevents the storage of vitamin C. It affects the cyrochrome, oxidation system of the cells. It interferes with certain enzymes of the kidneys which deal with absorption.

It interferes with the action of the thyroid, parathyroid, adrenal, pancreas.

It counteracts the thyroxin of the thyroid, parathyroid, adrenal, pancreas.

It counteracts the thyroxin of the thyroid, and interferes with the production of cortosterone. It prevents glycophosperic acid from breaking down into phosphoglycerin acid and into lactic and peruvic acids. These are steps that are interfered with in carbohydrate metabolism.

It interferes with the purine metabolism so that we get an accumulation of uric acid which may form kidney stones and cause gout. There

is an increase of cholosterol in the blood. If the fluoride joins with acetic acid—vinegar—it forms fluoroacetic acids which prevent the breakdown of citric acid into other forms. Citric acid is a poison which injures the heart muscle.

The intake of 0.25 millograms of hydrofluoric acid in each glass of 1 part per million fluoridated water starts off the chain of body destruction. This strong acid in the stomach may or may not aggravate ulcers. Then with a change of body functions as we have mentioned with reference to normal activities it may produce allergic activities.

The recognized allergic symptoms of varying kind and degree manifested are:

1. Vasomotor disturbances and rhinitis.
2. Bronchitis and asthma.
3. Gastrointestinal disturbances.
4. Dermatitis-hives-acne.
5. Alopecia.
6. Diabetes.
7. Anemias.

BONY CHANGES

Fluoridation may slow growth of bones because of disturbance of phosphorus-calcium ratio, resembling arthritic changes.

BLOOD CHANGES

In studies done of about 500 cases, everyone tested was allergic to sodium fluoride from mild to severe reaction. Blood of people living in fluoridated water areas may take from 6 to 20 times longer to coagulate.

HEART AFFECTED

Loss of calcium increases citric acid poisons, injures and destroys adesintriphosphate enzyme. Increased cholosterol of the blood may contribute to high blood pressure and cause hardening of the arteries.

The sodium part of sodium fluoride and accumulates in tissues retaining fluid in cases of cardiac failure, kidney failure, liver failure or any form of ascites wherever it is counterindicated.

KIDNEY TROUBLE

The uric acid accumulation or hydrofluoric acid, or injured enzymes and stone formation will impair or damage kidneys so they cannot excrete the fluorides or other waste.

DIABETES

Diabetic symptoms such as high blood sugar and sugar in the urine can appear as injury to carbohydrate metabolism.

NERVOUS DISORDERS

Chronic fluorine poison affects the section of the brain concerned with volatile and the will to resist. The same area is affected by hypnotism. Inhibition of phosphatase exerts progressive degen-

erative changes on the nerve tissue throughout the body by altering phosphorous calcium ratio and inhibiting the utilization of vitamin B_1. It affects the cerebral area to a large extent.

Experience on rats showed a marked deterioration in mental alertness, accompanied by a state of passiveness and bewilderment.

EYE INJURY

There is a question of increase in eye diseases due to artificial fluoridation. In Washington, D. C., fluoridated without legislation or permission, more cases of glaucoma are being reported. As yet there are no definite statistics.

CANCER

Experiments show that sodium fluoride in drinking water shortened the lives of animals with a tendency to cancer.

MOTTLED TEETH

In concentrations less than 1 part per million fluorine caused mottling in 33 percent of the child population of Salt River Valley, United States of America (Smith, Smith, Foster 1938. Bull. Univ. Arizona 61).

The Pago Indians' School showed a 100-percent mottling of teeth from drinking fluoridated water 1 part per million.

DENTAL HEALTH

Diet, vitamins, antibiotics, dental hygiene, and lessened acid in the mouth will give far better results than any other program. Brushing the teeth after every meal and eating less candy and sweets will help stop decay.

Sodium fluoride is not essential for body function, but calcium is, and we cannot have good teeth without calcium being present.

ARTIFICIAL FLUORIDATION

Artificial fluoridation is fraught with dangers. Sodium fluoride is a highly toxic protoplasmic poison, 15 times stronger than arsenic, having radioactive properties. The smaller the dose, the greater the activity.

The danger lies not so much in injury to the somatic cells that can partly repair themselves, but to the embryonic cells that undergo mutation and will show up in generations to come.

PREMATURE BIRTHS

Massachusetts does not show premature births as among the first 10 leading causes of death.

The ratio is 26.7 percent average throughout other sections of the country.

In Texas the ratio is 35.1 percent; in New Mexico, 55.9 percent. Both of these States are highly fluoridated areas.

We know that malnutrition will prevent conception, or delay it. Plus fluoridation it would present a great danger to our birth rate.

UNSCIENTIFIC

It is unscientific and impractical to prescribe a toxic substance for the duration of our life, as an experiment, whether we need it or not, against our will, and without being able to stop taking it if we want to do so.

LET US KEEP OUR WATER SUPPLY PURE—SUMMARY

Artificial sodium fluoride is an inorganic, toxic, protoplasmic poison, easily ionizable and soluble, different from CAF 2, an organic not so soluble substance held together by covalent bonds found in nature.

Artificial fluoridation affects every cell and system of the body:

1. Calcium, magnesium, and other minerals.
2. Connective tissue, bones, teeth.
3. Enzymes
   - (*a*) Endolase
   - (*b*) Lipase
   - (*c*) Phosphatase
   - (*d*) Adenosinetriphosphate and other enzymes
4. Vitamins B_1; B_2; B_6; C
5. Endocrines
   - (*a*) Tyroxin, thyrotropic
   - (*b*) Ephedrine
   - (*c*) Cortosterone and others

6. Metabolish and cytrocrome oxidation of cells; carbohydrates, proteins and fats.

7. Cell oxidation interfered with causing cell destruction with disease and death.

8. Mottled teeth—an indication of toxic content of sodium fluoride in the water.

9. Wasteful procedure. Five-tenths of 1 percent of fluoridated water will be used for purpose intended; 99½ percent of it is wasted. For those who want it, there are many alternatives, such as tablets, tooth paste, and so forth.

10. This forced experiment with a protoplasmic poison which all must ingest, in mass medication without parallel in the history of medicine, without a doctor's prescription, can cause symptoms of disease, such as allergy, internal and gastric upsets, such as colitis, blood conditions, gland and nervous trouble, diabetes, arthritis, muscular weaknesses, shortening life of cancer animals, hardening of the arteries, kidney troubles, and a long list of other serious illnesses. [Applause.]

Mr. Dolliver. I must caution the audience that we do not permit expressions of approval or disapproval, else we could easily get into chaos, unless such a rule is followed. Accordingly, you will please not express approval or disapproval of what any witness says.

Now, are there any questions?

(The paper The effects of Fluorides on the Human Body, by Dr. Brusch is as follows:)

The Effect of Fluorides on the Human Body

By Charles A. Brusch, B. S., M. D.

NATURAL FLUORIDES

Calcium fluoride, calcium phosphofluoride
Held together by covalent bands
Slightly soluble
Occur in first mile of earth's crust
The 20th most common element, fluorine is found in almost all foods: eggs, milk, cheese, butter, fish, soybeans, molasses, etc.
Sodium phosphate (baking soda) contains 2,000–3,000 parts per million and tea contains 70–500 parts per million

ARTIFICIAL FLUORIDES

Sodium fluoride
Inorganic, toxic, protoplasmic poison
Highly soluble
Accumulative
1 part per million in a glass of water contains 0.25 milligrams of hydrofluoric acid
Byproduct of bauxite clay and aluminum

INDUSTRIAL USES

Bleacheries
Electronics
Emery wheels
Flux in foundries
Glass etching
Insect and roach powder
Plastics
Rubber work
Varnishes

HOW ABSORBED BY THE BODY

Air	Radiation	Liquids	Solids
Dust	Fluorescent lighting	Water	Foods.
Fumes	Chemical rays	Milk	Tablets.
Poison gas	Television	Other beverages	Dental applications.
		Sprays [1]	Toothpaste.
		Hydrofluoric acid [1]	

[1] Absorbed by skin contact.

FACTORS AFFECTING ABSORPTION OF FLUORIDES

Age: Infants and elderly people absorb fluorides most readily.

Amount: Small amounts frequently ingested mean greater absorption.

Duration: The longer fluorides remain in the intestinal tract, the greater the absorption. Example: fatty foods.

Environment: Higher temperature causes greater absorption. (Climate.)

Form: Absorption is 4 times as great in water as in solid form. When water is boiled 10 minutes, concentration is doubled. In acid media, fluorides are more readily absorbed.

Nutrition: Deficiency of calcium, minerals, or vitamins causes greater absorption.

Physical condition: Sickness (diabetes, rheumatism, kidney disorders, etc.), infections or fever cause greater absorption. Tooth decay is greater after illness. Also, persons with higher metabolism have greater absorption.

Sex: As a rule, the female absorbs more readily than the male.

Soil: The higher the fluorine content of the soil, the more fluorides are absorbed by food.

Type: Artificial fluorides are 2,500 times more soluble than natural, natural dissolving at a rate of 0.0016 gram, and artificial at a rate of 4 grams, in 100 cubic centimeters of water.

Composition of the human body

Organic	Fluid	Inorganic	
Cells: (*a*) Protoplasm (*b*) Water and minerals Muscle Vital organs Skin Appendages Blood and lymph glands	Water 65-85 percent	Calcium Carbon Hydrogen Iron Magnesium Skeletal structure Teeth (organic and inorganic)	Nitrogen Oxygen Phosphorus Potassium Sulfur, etc

SYSTEMS

Circulatory system	Nervous system
Gastrointestinal tract	Reproductive system
Genitourinary tract	Respiratory system
Muscular system	Skeletal structure

EFFECTS ON BODY

Body minerals: Fluorine acts as a flux combining with calcium, magnesium, etc.

Bones and skeletal structure: Effects are 15 times greater in femur than in teeth.

Cells: Interferes with breathing or feeding of cell; retards or destroys other processes; induces capillary constriction.

Connective tissue: Impairs functions.

Enzymes: Destroys adenosinetriphosphate, endolase, lipase,[1] phosphatase, urase, other enzymes.

Glands: Interferes with functions of cortosterone, epedrine, thyrotropic, tyroxin, other hormones, liver.

Metabolism: Interferes with assimilation of carbohydrates, fats, proteins; cytrocrome system of oxidation of cells.

Teeth: Mottled teeth, early sympton of toxic poisoning, occur in about 1 out of 5 cases. As little as 0.4 part per million fluoride will cause mottling in about 33 percent of cases.

Vitamins: Destroys or prevents absorption of vitamins B1, B2, B6, and C.

Bacteria Fungus Virus

(Always present in or on the body)

when body resistance is broken down through deficiency of nutrition and oxygen—

Produce:

Inflammation Degeneration Destruction

NOTE.—Susceptibility to allergy in individuals varies by several hundred percent.

[1] One part diluted to 15 million will cause 50 percent destruction of lipase.

Fluorides a causative factor in—	Symptoms
Allergies [1] (Loss of immunity):	
Dermatitis, acne, eczema, hives	Itching and swelling.
Gastrointestinal disturbances	Belching, burning pain, diarrhea, colitis.
Respiratory disorders: Asthma—bronchitis	Coughing, shortness of breath.
Vasomotor disturbances and rhinitis	Running nose, eyes.
Alopecia	Loss of hair.
Blood and circulatory disturbances:	
Fluorine circulates through body as calcium fluoride	
Cholesterol increased	
Coagulation may be retarded 6 to 20 times	
Anemia—leukemia	Loss of appetite, weakness, retarded growth.
Disturbances of circulation	Tingling of extremities, coldness, numbness.
Bone disturbances: Mild to severe changes resembling arthritis.	
Cancer: Experiments show that fluorides shorten the life of animals having cancerous tendencies.	
Diabetes: Increase of sugar in blood and urine	Weakness, loss of weight, increased thirst
Edema (from various causes): Aggravated by sodium retention.	
Genitourinary and kidney:	
Accumulation of uric acid	Difficulty in voiding, swelling of legs.
Injury to enzyme (urase)	
Stone formation	
Heart:	
Functions impaired due to—	
Loss of calcium	Shortness of breath, weakness sudden death.
Increased citric acid poison	
Destruction of enzyme (Adenosinetriphosphate)	
Multiple sclerosis	Weakness, loss of function.
Muscular disturbances	Muscular weakness.
Nerve disorders: Degeneration of nerve tissue	Mental deterioration, passiveness, bewilderment.
Reproductive disorders:	
Premature birth	
Sterility, due to nutritional deficiency, mineral imbalance, effects of fluorine on embryonic tissue (hereditary).	
Virus infections, due to lack of immunity: Chicken pox, colds, encephalitis, measles, mumps, poliomyelitis, etc.	Temperature, fever, chills.

[1] In over 500 cases tested by the Healy blood allergy method, all were found allergic to sodium fluoride The allergies ranged from mild to severe.

SODIUM FLUORIDE IS A POISON

Small amounts of sodium fluoride are very active and, if constantly ingested, may cause chronic fluoride poisoning, which would impair the health and shorten life.

NOTE.—The Council of Chemistry, Pharmacy, and Nutrition of the American Medical Association, has stated that fluoridated water should not be used with certain foods which contain a high percentage of fluorine, such as bone meal, cereals, lozenges, etc., and that in warm climates, where people drink larger amount of water, fluoridated water must be used with caution and the dosage cut down to less than 1 part per million, so that toxic symptoms such as mottling of the teeth will not develop.

SUMMARY

Is it reasonable to suppose that adding fluorine to our drinking water will prevent tooth decay? If so, why is it that in so many cases we can get so much fluorine into our systems and still have decayed teeth? Or why is it that some people who have no fluorine at all in their drinking water have good teeth? Since we cannot predict who will or who will not develop mottled teeth, it would seem more practical to give increased attention to proper nutrition and dental hygiene, rather than run the risks entailed in fluoridation.

The artificial fluoridation of our public water supply with sodium fluoride, 1 part or 1.5 parts per million, is being sought for the sole purpose of preventing decay of teeth in children. Since no contagious disease is involved, however, this is not a public health problem but a personal matter. Such fluoridation would impose upon the entire population the consumption of a highly toxic protoplasmic poison in small doses from the time before we are born until the time we die. This drug, against which there is no antidote, would be forced on all, regardless

of their environment, regardless of their physical condition, and regardless of their moral attitude—whether or not they wish to take this drug. No one would be able to stop taking it, should he so desire. At the same time, there would be created a false sense of security, a false impression that we do not need to consider the predisposing causes, the bacterial, nutritional nor the hygienic procedures under medical and dental care which are essential for good teeth. This experiment would be expensive, impractical, unconstitutional, and unscientific.

It is important that this issue be settled here. It does not belong in a community, because a community is not able to receive the facts on both sides of the issue, and because several communities using the same water supply may disagree on whether or not fluoride should be placed in the water. This is a national problem, because the whole population is to be fluoridated. We must demand the protection to which we are entitled under the Pure Food and Drug Act, which prohibits the contamination of our foods with poison and the pollution of our water supply.

Massachusetts General Laws, chapter 270, section 2, and also chapter 111, section 160, make fluoridation illegal, but appeals to the State official responsible to enforce these laws go unanswered.

We must realize that this is just a wedge and that if we adopt or submit to this type of experimentation, it will be only a forerunner of other measures interfering with our professional, industrial, and ordinary American way of life. If we fail to pass H. R. 2341, known as the Wier bill, we shall be following the customs and experiments of the dictators and the Communists. We shall no longer be freemen.

Mr. PRIEST. Mr. Chairman.

Mr. DOLLIVER. Mr. Priest.

Mr. PRIEST. I think with all of your scientific knowledge, you have some sympathy with Members of Congress who sit through these hearings, hearing equally eminent scientists say that certain things are unscientific, and then others come in and say that they are very scientific. I am sure that you can appreciate the provision of a congressional committee that does not have, of course, the time to make the very serious and long-range studies for itself that you do, but must depend in the end, in making its decision, on the weight of the testimony.

It may be that the committee is perhaps more able to decide the constitutional and legal questions involved than they are the scientific questions involved, and as you well are aware, the scientists themselves seem to be considerably divided on this basic question.

I just want to ask you one technical question. I have studied a little chemistry at one time. On page 1 of your statement there is an expression there, a word, that does not mean anything to me, and perhaps it should. I know you can well explain it. It is down about the fourth paragraph, the word "covalent"—covalent bonds. You state: "Calcium fluoride is held together by covalent bonds which gives it a certain chemistry property."

That sentence does not mean anything to me, and I would like for you to explain it to me, please.

Dr. BRUSCH. There is a difference between artificial inorganic sodium fluoride and natural calcium fluoride or calcium phospho-fluoride. Calcium phospho-fluoride is found in plants. The plant derives its fluoride from the soil and converts it into calcium fluoride or calcium phospho-fluoride. When man or animal consumes this plant life the fluoride is taken up in this form. This natural form is held together by covalent bonds, meaning that nature has caused a union or combination between the calcium and the fluoride that makes it difficult to be broken down and consequently only slightly soluble; 0.0016 grams is soluble in 100 cubic centimeters of water.

This is not readily ionizable: that is, it does not disperse readily in solution. It is not as toxic. On the other hand, artificial sodium fluoride, which is produced as a byproduct, is not held together as strongly as nature's method. It has no covalent bonds; therefore it disperses readily in solution.

It is highly ionizable and toxic; 4 grams will dissolve in 100 cubic centimeters of water (2,500 times more than natural). It is not found in plant or animal in this form. When taken into the system the fluorine combines with calcium or other metals. One glass of artificial fluoridated water (1:1M) contains 25 milligrams hydrofluoric acid. This is one reason why we can take so much of the natural fluorides daily and not be affected as readily as we would be by taking in minute doses of artificial sodium fluoride 1:1M to 2:1M.

Calcium fluoride is the form that is found in the body. To the body sodium fluoride is an unnatural combination which the body has to break down. The fluoride joins with body calcium and is carried by the blood stream to the body cells. Some penetrates the cells and some does not. The amount ingested and the individual susceptibility determines the toxicity to the system.

Mr. PRIEST. Thank you sir, that is all.

Mr. BEAMER. Mr. Chairman, I just want to say that that is the longest definition of an eight-letter word I ever heard.

Mr. PRIEST. As I gather, then it is your contention and that of your organization that natural fluorine is not as detrimental, from your viewpoint, as when artifically added because of the difference in solubility.

Dr. BRUSCH. Yes.

Mr. PRIEST. That is all, thank you.

The CHAIRMAN. Are there any further questions? If not, we thank you, Dr. Brusch, for your appearance and for the testimony you have given the committee.

I would like to call attention to the fact that the time available for the proponents is drawing to a close and growing short, and so that if anyone is called upon to define a word, he would probably be serving in the interest of limited time if he would answer as succinctly as possible.

STATEMENT OF MRS. VERA E. ADAMS, PRESIDENT, NATIONAL COMMITTEE AGAINST FLOURIDATION, INC., FORMERLY CITIZENS COMMITTEE ON FLUORIDATION, INC., WASHINGTON, D. C.

The CHAIRMAN. The next witness is Mrs. Vera E. Adams. Mrs. Adams is president of the National Committee Against Fluoridation, Washington, formerly Citizens Committee on Fluoridation. Mrs. Adams.

Mrs. ADAMS. Mr. Chairman, we grew so much we had to change our name to fit our functions.

Mr. Chairman, I have cut my statement and then cut it some more, so that it looks like a game of hopscotch now, but I will try to make it as brief as possible to bring out what I feel I want to bring out especially.

The CHAIRMAN. Well, Mrs. Adams, your statement will be made a part of the record in full and, of course, you will observe the limita-

tion as to time, and the clerk will call attention to the time when it has expired.

Mrs. ADAMS. The time has come when the people of this country—a Nation whose very cornerstone is the integrity and liberty of the individual citizen—seems to be faced with the necessity of defending themselves from their own Government in order to preserve that individual liberty. They are forced to defend themselves against a program of mass medication federally instituted, promoted, and financed—the program of fluoridation of our Nation's water supplies.

And we who are thus trying to defend ourselves are even being accused of some sort of mercenary motives in our opposition to this compulsory doctoring. We are being asked "Who is furnishing all the money for this campaign against fluoridation?" I will tell you who is furnishing the money. It is just plain, ordinary citizens who are jealous enough of their inheritance of liberty to man the watchtowers, spot danger, and give warning, and the money used in this cause comes out of the pockets of these ordinary, wage-earning citizens. Unfortunately, the sum at their disposal is infinitesimally small compared to the millions which are being poured by the Government into its channels of propaganda.

This committee, which has recently changed its title to National Committee Against Fluoridation, Inc., was organized in May 1952, and made an effort through an appeal to our District Commissioners to obtain at least a delay in introduction of the process here until the totally uninformed residents could learn something of the pros and cons of the subject.

This formal appeal has never been honored with so much as an acknowledgement. And in direct contradiction of the much-emphasized assertion that each city, town, and community must decide this question for itself, the voiceless and voteless taxpayers of the District of Columbia have been absolutely ignored, and were simply assigned the role of guinea pigs in a test case.

As now representing a constantly growing national opposition to fluoridation of drinking water, this committee strongly urges that H. R. 2341, a bill to protect the public health from the dangers of fluoridation of water, be approved by the Congress. We urge this on the following grounds:

(1) We believe that fluoridation is unconstitutional.
(2) We believe that fluoridation is illegal.
(3) We are convinced that fluoridation is ethically immoral.

IS FLUORIDATION OF PUBLIC WATER SUPPLIES CONSTITUTIONAL?

The Constitution—the document itself—as written and preserved in our national archives with an almost sacred care, may be compared to the steel structural framework of a building. It is the architectural foundation and skeleton of a living, human edifice planned by the pioneers of liberty in a new country, whose first timid gropings toward self-government under freedom were inspired by an inborn spiritual instinct which is the heritage of every man, and a faint prophecy of the "glorious liberty of the children of God" referred to in the Scriptures (Romans 8:21).

This is something which is utterly intangible, but indestructible, and which no amount of unjust domination or even enslavement can completely crush or kill. It is this spirit of our Constitution which is, or should be, the real governing principle in our free land, and if this spirit is not cherished and preserved, the letter will prove to be an inadequate safeguard. In many ways we seem to be getting further and further away from this spirit, and the lofty principles embodied in it.

As one of our keen newswriters has said:

> Most Americans can see that Soviet tyrannies in Eastern Germany and elsewhere menace their own freedom. But fewer can see that growing disregard of principles of human dignity embodied in the American political heritage is a darkening cloud on the Republic's horizon.

In agreement with this is a statement by Judge Elias F. Shamon, special justice of Boston Municipial Court, which appeared in the Boston Sunday Post of April 4, 1954:

> Some of our high court judges are injecting into their decisions a wave of secularistic thinking which is as insidious as the Communist menace. * * * There are statements in these decisions which declare that all concepts are relative—including truth and morality—and nothing is absolute. * * * The thought that all concepts are relative affects us deeper than the mere logic involved. Our Government is based on the assumption that there are certain absolute concepts, referred to in the Declaration of Independence as the "laws of nature and of nature's God." The concept of God is certainly not a relative one. The concept of truth is certainly not relative, and to say that man is endowed on birth by his Creator with certain inalienable rights is certainly not a relative concept. * * * It is totalitarianism to hold that morality and customs are changeable as the times, because if we subscribe to this doctrine, we must say that the will of the majority makes right and what was true yesterday may not be true tomorrow—it all depends upon who is in power. * * * It means that the state—the sovereign—can look over a person's home, decide to take it without benefit of eminent-domain proceedings and tell the owner that his rights of property are subordinate to the will of the sovereign.

As an example of such an insidious decision is that rather recently given out by a Judge Artl in Cleveland, Ohio, who, in trying to prove fluoridation justified, said:

> A person's constitutional right to treat his health as he deems best, and of parents to raise their children as they deem best, and to be free from medical experimentation and to exercise freedom of religion are all subordinated to the common good.

He leaves with us the implication that the "common good" is to be determined and defined solely by the state. In the case of fluorine in drinking water, it is the state (alias the Public Health Service) which is decreeing what is for the "common good." One more step, and the state owns the child, and the individual, even as in Russia.

We believe that the first amendment to the Constitution is violated by this program of compulsory mass medication and mass prescription. As Dr. Paul Manning has said in his Case Against Fluoridation:

> Fluoridation of the public water supply violates the fundamental principle of human rights and dignity—the principle that no person or agency shall have authority over the body of a human being other than himself.

Some of our legislators, in State and city, are assuming powers which they do not actually and rightfully possess. It is evident that neither the State nor the Federal Government has any possessive right over the body, or mind, of the individual citizen just so long

as that citizen is doing nothing which might endanger the health and well being of other citizens, and so long as there is no emergency which would require the application of special measures.

Will any reasonable person attempt to claim that tooth decay is a national emergency, an epidemic, or even a contagious disease? Let the authorities, under the direct inspiration of the Public Health Service, are seeking to apply emergency tactics and police power to combat it.

Dr. Gordon Leitch, chairman of the public policy committee, Oregon State Medical Society, in the medical journal, Northwest Medicine, for March of this year, referring to the fallacious statement that fluoridation is basically to dental caries as chlorination is to the enteric diseases, such as typhoid fever, has this to say:

> It is here the plausible comparison breaks down, and the efforts of public-health officials begin to take on a different hue. When they step from the bounds of communicable and contagious disease, they step out of their legitimate, well-recognized field, into the realm of medical therapy, whether preventive or curative, where the rights of individuals are of paramount importance and far transcend the interest of the public. Police power of the state, from which stems public-health authority, has no place in the prevention or treatment of a disease which harms only the victim thereof.

In the Hastings Law Journal, volume III, spring issue 1952, in an article Comments—Fluoridation of Public Water Supplies, by James B. Thompson, we have the following:

> Pound, in Interests of Personality (28 Harvard Law Review 343, 349, 355, 1915), classified this inalienable right of the individual as "interests of personality—the individual and spiritual existence." He divides the interests in the physical person into five categories: "Immunity of the body from direct or indirect injury; preservation and furtherance of bodily health and immunity of the will from coercion; freedom of choice and judgment as to what one will do." These three have long been recognized. The other two are products of the progress of civilization, namely: "Immunity of the mind and nervous system from direct or indirect injury, and the preservation and futherance of mental health; and freedom from annoyance which interferes with mental poise and comfort." * * * These interests, within limits, shall be recognized legally and given effect through the force of the state. It would seem that if it was up to the state to give force and effect to these rights, it should not be allowed to invade them itself. Such seems to be the case with fluoridation.

In the case of *Tomlinson* v. *Armour & Co.* (75 N. J. L. 748, 70 Atl. 311, 317), the court said:

> Among the most fundamental of personal rights, without which man could not live in a state of society, is the right of personal security, including the "preservation of a man's health from such practices as may prejudice or annoy it." (Blackstone's Comm. vol. 1, 129–134)—a right recognized, needless to say, in almost the first words of our written constitution (constitution of New Jersey, art. 1, p. 1).

In spite of the fact that this can be proved to be a federally conceived, promoted and financed program, we are often told that it is not a Government matter—that each local community must decide for itself, by referendum or vote—whether fluoridation should be adopted or not. We assert that no referendum, or even vote, is competent to define or decide the constitutional rights of each individual in a community. One person may heartily endorse a medicine, but regardless of his faith in it or belief in its efficacy, of how much he may want to recommend it to his neighbor, he does not have any right, or police power, to force that neighbor to take it, either by persuasion, by a voting machine, or by force. The moment he at-

tempts to do this, he is infringing upon that neighbor's inalienable rights conferred by the Declaration of Independence and the Constitution.

The doctrine that "might makes right, and truth is a majority vote," is a dangerous one. In the matter of fluoridation of the drinking water, which is an indispensable article of diet, and necessary to life itself, no authority, local, State, or Federal, has any right to tell people, "You're going to have fluorine in your water whether you like it or not."

There should always be some individuals opposed to fluoridation even in places where a majority might ignorantly vote for it. A vote for fluoridation is always based on insufficient information on both sides of the question, and so cannot represent an intelligent and considered judgment. And our citizens cannot hope to get information on both sides of this question from the proponents, as from their standpoint there is only one side.

If there is only one side to this question, why is it that close to 400 cities, towns, and communities have rejected fluoridation of their water supplies in one way or another, some after several years of trial, and some after it has been sneaked in on them secretly, but later exposed. These represent roughtly about 30 million of our population, surely a cross-section too large to be ignored.

The Hastings Law Journal above referred to further states that—

> the first amendment to the Constitution provides that Congress "shall make no law prohibiting the free exercise of religion." The 14th amendment protects citizens or respective States similarly. In *Cantwell* v. *Connecticut*, the court reasoned that freedom of religion is guaranteed by the 1st amendment and is protected by the 14th amendment from State interference. The Court there reasoned that freedom of religion has a duel aspect: freedom to believe, and freedom to act exercising such belief. The test is the weighing of the interest of the State against the right of the individual to exercise religious beliefs.
>
> Before the interest of the State will outweigh the interest of the individual, there must be a showing that the exercise of the particular religious belief is of such a nature as to create a "clear and present danger," that it will bring about substantial evils that the State has the right to prevent. Dental caries creates no epidemic or emergency of contagious nature. Therefore, we have no "clear and present danger" or any evil at all. There is a failure to rebut the presumption of unconstitutionality. Consequently, it must stand that fluoridation of public water is unconstitutional because in violation of freedom of religion. * * * Fluoridation of water is, therefore, in violation of State laws and the Federal Constitution. The more serious constitutional objections must be hurdled before a State validly may introduce fluoride into public water supplies.

A majority opinion handed down by the Supreme Court in 1943 contained the following significant statement:

> If there is a sixth star in our constitutional constellation, it is that no official, high or petty, can prescribe what shall be orthodox in politics, nationalism, religion, or other matters of opinion, or force citizens to confess by word or act their faith therein. If there are any circumstances which permit an exception, they do not occur to us.

But when the people of this country, up to the number of approximately 30 million, resist compulsory mass prescription and medication, which represents direct and deliberate interference with their personal and bodily self-government, what happens? They are called names—all kinds of names—"crackpots, know-nothings," and worse.

More than this, they are even the object of personal threats and insults.

President Eisenhower, in his talk before the American Newspaper Publishers Association, said:

> If the day comes when personal conflicts are more significant than honest debate on great policy, then the flame of freedom will flicker low indeed.

We cannot get the proponents of fluoridation to enter an honest and open debate; they will talk only when they have the whole stage to themselves, and they always fix it so that they have the last word. The real reason is that they cannot give satisfying answers to the arguments so generally and logically being advanced against mass experimentation on whole populations with an admittedly unproved and possibly dangerous element.

In the very recent decision of the Supreme Court in the District school segregation case, there is the following very pertinent passage, which is directly applicable to this present case of fluoridation:

> Although the Court has not assumed to define "liberty" with any great precision, that term is not confined to mere freedom from bodily restraint. Liberty under law extends to the full range of conduct which the individual is free to pursue, and it cannot be restricted except for a proper governmental objective.

We ask, Are the people of this country free to pursue the full range of conduct which they may choose in regard to employing the method of treatment which they desire when they have actually poured down their throats a dosage of fluorine impregnated water which they do not want, and do not need? Is this liberty under law?

IS FLUORIDATION OF PUBLIC WATER SUPPLIES LEGAL?

In January of this year, District Court Judge James U. Galloway, of Shreveport, La., issued an injunction halting that city's move to put fluorine into the drinking water, from which the following is quoted:

> * * * medication, in lay understanding, includes prophylaxis or preventive measures, when applied to the individual * * * Considering the end results that are sought, we cannot escape the conclusion that it is a form of medication, or at least a scientific treatment or a sort of hydrotherapy, by way of ingesting these mineralized waters, of and for the children of the community under 12 years of age * * * No person or segment of the population having that condition (dental caries or tooth decay) can on that account have any adverse effect on the health, dental or otherwise, of the general public or of any segment thereof. We repeat, in our opinion this is not a matter of public health. It is strictly within the realm of individual and personal dental health and hygiene, within which each person should be free to choose his course for himself and those for whom he is responsible in the family relation. To this field, the just powers of the Government do not extend.

In an Associated Press dispatch of September 14, 1952, President Eisenhower was quoted as saying:

> I am opposed to a federally operated and controlled system of medical care which is what the administration's compulsory health-insurance scheme is, in fact. It would destroy things that are essential to high-grade medical service. For instance, we must preserve the completely voluntary relationship between doctor and patient. This means that there must be no intermediary—and that is what the Government becomes if the doctors get paid, not by the patient, but by the Government. But still more important is the effect of compulsory methods on the patients. * * * The patient may fear—and no doubt correctly in many cases—that he would receive regimented, assembly-line treatment instead of care that is tailored to his individual needs.

Now, bearing in mind the almost limitless variation of individual physical disposition and susceptibility, how about dosing our drinking water, every drop of it available, with a fixed percentage of a highly toxic chemical such as fluorine and made the dosage uniform and general, regardless of the amount consumed, amount of fluorine taken in from other sources, such as food, state of individual health, allergies, and so forth? Is this not assembly-line treatment at its worst? Is this "preserving the completely voluntary relationship between doctor and patient" which is so essential? Is not the Public Health Service an intruding intermediary here?

We may here point out that no local departments of health, or even local dental societies, have ever considered fluoridation sufficiently essential to the public health to take the initiative in ordering, or even advising, its adoption; the inspiration and motive power have come solely and directly from the Federal Public Health Service.

In this connection, we may point out that this is only the beginning of this regimented, assembly-line treatment. Dr. Gordon Leitch, of the Oregon State Medical Society, stated in the medical journal Northwest Medicine for March 1954:

* * * Considerable interesting information on the medication of community water supplies, of which the addition of sodium fluoride is but the current or initial possibility, has come to light since this question was first viewed. If American medicine would do the public a service it should recall immediately any and all endorsements pertinent to fluoridation and its hidden appendages which have been extracted from it. Then it should restudy the entire problem in all its ramifications and implications in the light of the evidence now available.

And in an article entitled "A Year of Decision," in the same magazine for January 1954, Dr. Leitch says:

While for the moment the proposal rests with fluoridation, if the theory is sound it is just as logical to add salicylates or cortisone to combat headaches or arthritis, or to add chlorophyll to ward off body odors. Indeed, the day might logically be anticipated when the pipelines of a city will be so laden with medications deemed necessary by public health authorities bent on serving the masses that the medicated fluid will need intermediate booster pumping stations to see that it reaches its destinees, at which time the medicated fluid will be good for caries, dandruff, and falling arches; but we hate to think what it would be like when mixed with bourbon.

In the Consumers' Research Bulletin of last March is the following quotation from the Medical Press, a well-known British journal for physicians:

Unless the medical profession takes a firm stand, expediency will continue to triumph over caution and commonsense, and we may well be faced with irreversible results. * * * It is more than time for our present lethargy and inertia were replaced by an alert and suspicious vigilance and that all proposed and existing food additives were subjected to the sharpest scrutiny * * * else we may well spend the next generation in medicine trying to unscramble—

the harm that has been done to the human organism by prevalent factory practices in preservation, processing, and sophistication of foods. Water, of course, being an indispensable article of diet, and essential for life, must be classed as a food.

Dr. V. O. Hurme, of the Forsyth Dental Infirmary for Children, Boston, Mass., in a letter dated October 22, 1953, to a correspondent, has this to say:

The proponents, as well as the opponents, of fluoridation generally overlook the fact that it is incumbent upon the proponents to prove, beyond all contention,

that fluoridation is safe and desirable for 100,000 people out of 100,000 people. It is not necessary for the opponents to offer this proof, since they are not proposing to dose everyone in a community with a minute daily dose of a toxic chemical, for which there is no known antidote.

The United States Supreme Court ruled in 1914 that it is incumbent upon the person who places poison in a food to prove that it is not toxic; the burden is not upon the complainant to establish that fact.

And further:

I can assure you of the fact that the generally accepted principle of biologic variation is being ignored completely by the dental and medical groups which are sponsoring fluoride treatment of public water supplies. * * * The very nature of the fluoride problem calls for well-integrated medical research programs, which may require at least 20 years to produce meaningful results. The insidiously cumulative effects of this halogen do not permit the making of hasty conclusions, if we aim to remain unemotionally scientific.

But now after only a few years of experimenting, and on the basis of conclusions arrived at by what they themselves call association, i. e., variable, relative, and essentially unscientific evidence, they are ready to go full steam ahead on the calculated risk streamlined special, full throttle and no stops scheduled, and let anyone who gets in the way beware.

Cincinnati is a glaring example of how they are working. A year ago in February they had all the machinery set up and the date announced for turning the valve, when a courageous radio commentator, by the name of Tom McCarthy (no relation) threw a monkey wrench into the whole works by revealing that there were actually two sides to this question, strange as it might seem, instead of just only one.

The battle raged for 10 months, with Mr. McCarthy being threatened and intimidated, and even put off the air once, but restored by popular demand, until in November of last year the people got the vote for which they had petitioned in unprecedented numbers, and stopped the program short by a large majority.

Dr. Robert J. Mick, author of Large Facts That Are Kept in Small Print Relative to Fluoridation, says:

I believe fluoridation of water is worse than an atomic bomb. Those injured by the atom bomb may get over their illness but those born with injuries caused by consumption of artificially fluoridated water will never get over the ill effects.

He declared the absolute true ill effects of artificially fluoridated water cannot be told for at least two generations, at which time it will be too late. Through research in conducing rat experiments into the third generation, use of fluoride developed cripples and paralysis of rats.

I believe the American Dental Association, of which I am a member, and any other organization which has endorsed artificial fluoridation, will contribute to the greatest harm ever to befall the unborn children of the United States.

Our good neighbor, Canada, is having to fight the sale of this made-in-America product. In Saskatchewan and Alberta Provinces controversy is raging over the introduction of fluoridation. Mrs. C. R. Wood, member of the legislature from Stony Point, in Alberta, declared recently that it is "contrary to the right of each individual to choose what he or she shall take into their bodies by way of drugs or chemicals * * * and savors of totalitarianism." So strenuous has been the opposition that final plans for treating the water in both

Regina and Saskatoon, two of the largest cities, have been postponed because of heavy signing of petitions for a vote. The people of Saskatoon so resented what they term "forcing fluoridation down our throats without our permission" that everything there also is being held up.

We may well ask, Why all this opposition? Because fluoridation of drinking water is essentially an illegal procedure, and hurts people in their most vulnerable point—their instinctive love of their rightful individual freedom. It represents an assumption of authority on the part of a department of the Federal Government which is not real, and a brazen presumption of knowledge and wisdom which does not exist.

And what about the Federal Food and Drug Act, which is designed, presumably, to protect the health and lives of the people of this country? This act declared that it is unlawful to place a nonnutritive or deleterious substance in food or drink and imposes a fine of $5,000 or imprisonment or both. The famous Beer case in Massachusetts is a case in point. An indictment was returned March 7, 1945, against the Commonwealth Brewing Corp. and Leo Kaufman, treasurer and manager, Springfield, Mass.

The violation of the pure food laws charged was: Adulteration, section 402 (a) (2), the product contained an added poisonous or deleterious substance which was unsafe within the meaning of the law since it was not required in the production of the product and could have been avoided by good manufacturing practice.

In that case the District Court Judge Ford ruled:

> The question is, Is fluorine itself deleterious? * * * I want to point out to you that it is entirely unimportant and irrelevant how much the quantity of fluorine was which was added to the beer. The issue is, Was fluorine in some form added as an ingredient? * * *It is an added deleterious ingredient the statute denounces, not an added quantity of the deleterious ingredient. * * * I want to make this plain—that the quantity of fluorine added to the beer has no relevancy here. I think I might point out to you that there is a section of the Food and Drug Act where the quantity contained in a food may be of considerable importance, and that is where it has been charged under section 402 (a) (1) of the statute which deals with adulterated foods where the deleterious substance has not been added * * *. Congress recognized that nature's products such as grain, salt, hops, water, contain poisonous substances in small amounts and that they were not a danger or evil so long as the poisonous substance was not extracted by artificial process and added * * *. In the case of an added ingredient, quantity is irrelevant, and the only question involved where it is added is, Was it added? Was it deleterious? Was it unsafe?

And now we see a strange procedure, and one which should be clearly explained. In July 1952, shortly after fluoridation was forced on the citizens of this city, this same Food and Drug Administration which made the laws on the citizens of this city, this some Food and Drug Administration which made the laws on the basis of which this Beer case was judged, gave out the following sudden statement of policy:

> The Federal Security Agency will regard water supplies containing fluorine, within the limitations recommended by the Public Health Service, as not actionable under the Federal Food, Drug and Cosmetic Act. Similarly, commercially prepared foods within the jurisdiction of the act, in which a fluoridated water supply has been used in the processing operation, will not be regarded as actionable under the Federal law because of the fluorine content of the water so used, unless the process involves a significant concentration of fluorine from the water. In the latter instance the facts with respect to the particular case will be controlling.

Pertinent to this specific exemption of an illegal practice is a comment by Mr. G. S. Bratton, of the Anheuser-Busch Co. in St. Louis, who represents an unanswerable argument against fluorine in public water supplies. He says:

> There is a very litle actual long-term experience with fluoridated water in the large industrial cities.

He states that wet-corn millers in the Kansas City and St. Louis area use tremendous quantities of water in processing 20 million bushels of corn annually, and they do not feel cheerful over the prospects of fluorine in the water. Mr. Bratton further says:

> Malt-syrup manufacturers are just as unhappy over their fate, since malt syrup made with fluoridated water may contain up to 8 parts per million of fluorine.

This is far above the margin of safety so confidently defended by the propagandists for fluoridated water. Also in the production of baker's yeast, it is not known what effect the addition of fluorine may have on yeast culture, but it is known that sodium silocofluoride is more toxic to yeast than sodium fluoride.

But our food and drug authorities have now fixed it so that the propagandists for fluoridation have the green light—a sort of courtesy card or personal privilege to break the law, and only what they call a significant concentration of fluorine, which might mean death, would attract notice, and then not in time to save a victim. Only an autopsy would prove that an actionable amount of fluorine had been present in the water or food which killed someone who had every right to be protected by his Government.

In view of the above facts, we ask you to judge whether this practice can be defended as being legal.

FLUORIDATION OF PUBLIC WATER SUPPLIES IS ETHICALLY IMMORAL

We have just recently listened to an amazing statement. This statement was to the effect that the Public Health Service is not pressing the fluoridation program. Ask the nearly 400 cities and towns which have waged war to win their freedom from pressure for fluoridation what they think about such a statement. They know very well where the pressure is coming from. Any one who has had even a glimpse of the report of the Fourth Annual Conference of State Dental Directors with the Public Health Service and the Children's Bureau, held here in June 1951, would have to laugh at this statement. That report has already been brought to your attention by our Mr. Palmer. It is one of the most revealing documents ever to come from a Government agency, and is a story of intensive propaganda for mass medication. It was not, of course, ever intended for general public consumption.

Mr. Robert L. Kern, editor of the News-Democrat, Belleville, Ill., says:

> Whether or not it realizes the truth, the United States Public Health Service now has gone overboard to promote a scheme that conceivably might turn out to be an instrument of race suicide.

The Public Health Service is putting out a tremendous amount of propaganda material for the promotion of fluoridation throughout

the country. While they admit that fluoridation is an experiment—that they don't know the answers—and have to admit that the time period for such a vital experiment has not nearly been fulfilled, their promotion material gives no hint of any uncertainty, but presents the supposed good effects of this medication as proved and conclusive. Their high pressure salesmanship instructions on "How To Obtain Fluoridation for Your Community" contains a long list of "do's and "don'ts" to guide the promoters.

Those who for good and conclusive reasons oppose fluoridation are dubbed "obscure scientists" or "self-appointed protectors of the public," and are supposed to get their information from "out-of-date and unrecognized medical dictionaries and encyclopedias." I wonder if they would put Thorpe's Dictionary of Applied Chemistry in this class. In volume V of that dictionary, under the discussion of fluorine, we find this:

> Both fluorides and fluosilicates are toxic and chronic poisoning may result from the presence of fluorides in drinking water * * * The use of silicofluorides for food preservation is illegal * * * Sodium fluoride is very poisonous, as little as 1 gram constituting a fatal dose.

Now chronic poisoning results only from the long continued ingestion of minute doses of a poison, and that is precisely the danger with fluorine. This same promotion booklet goes on to say:

> Do not refer to fluoridation as "therapeutic," "medicative," artificial," "experimental."
>
> Do not refer to fluoridation as "treatment of water," "mass medication," or "mass treatment."

But in spite of the cautious do not's it is all of these things.

It was Oscar Ewing who inaugurated the present intensive campaign to fluoridate the water not only of this country, but apparently of the world, if possible, as a supposed health measure. His yearly budgets are said to have been considerably over a billion dollars and during the years of his administration, in addition to huge sums spent for high-priced propagandists, for other personnel assigned to this project, and for advertising and propaganda material, some hundreds of millions of Federal tax money, as subsidies, were poured out to State and local health boards on condition that under detailed instructions they would push this health program.

From all over the country I have been getting letters now for 2 years past, increasing in volume lately, all in the same tone—"They are trying to force fluoridation on us here, and we want to know how to fight it." One received on May 3 from a doctor in a little town in Wisconsin—Delavan—says:

> Fluoridation of the public-water system was started here some 3 or 4 years ago by State and local sponsoring pressure groups. It was connected up and put in actual use in the early fall of 1953. This was an arbitrary transaction without the benefit of referendum until some 6 months later at the April election. Those opposing fluoridation were denied access to newspapers which were attacking all opposition as "crackpots" * * *. Just before election, the Rotary Club, the PTA, the public school, one church, and neighboring newspapers were enlisted on the side of the sponsors, including promotional picture shows in the public library, PTA, the public school, and a church.
>
> At this time I prepared a two-page informative letter and mailed it out to 600 voters 4 days before election. Results: Fluoridation was rejected 1,091 to 755. On the same day LaCrosse and Waterloo rejected fluoridation about 10 to 1 and Manitowoc rejected it by a comfortable and gratifying majority * * *. The vicious attack is still going on. Smear and discredit are the tools employed.

We submit that it is unethical to institute treatment of whole municipal water supplies with fluorine compound without first gaining the consent of every person so treated. There are quite a number of cities and towns in this country where fluoridation has been started without the consent, and sometimes without even the knowledge of the residents. Some of these are: Anchorage, Alaska; Louisville, Ky.; Salem and Beverly, Mass.; Saginaw, Mich.; Charlotte, N. C.; Pittsburgh, Pa.; Nashville, Tenn.; and Marshfield, Rhinelander and Stevens Point in Wisconsin. In Mount Dora, Fla., which voted out this mass medication by 3 to 1, after it had been in 2 years, the editor of the Mount Dora Topic cited information from an authoritative source in Washington to the effect that:

> The public can soon expect bills to be introduced into their State legislatures to make fluoridation compulsory in every community that has a public water supply * * *. I have seen a release sent out from Washington by the propaganda machine of the proponents of this scheme which states that the only opposition to water fluoridation in each State is a few scattered "crackpots" who only write spurious letters to the legislators and newspapers, and they call upon the legislators to "use common sense and throw those letters into your waste-baskets."

This mass medication is unethical and immoral because it violates the fundamental right and privilege of every individual to select the physician who is to prescribe for him according to his own individual physical tendencies and condition. No two people are alike in their requirements of both types and quantities of remedies, and to treat 165 million inhabitants of a country with a mass prescription is therefore not only an absurdity, but a moral offense.

In this connection I would like to quote a few passages from an address delivered on September 14, 1952, under the head of "The Moral Limits of Medical Research and Treatment," by Pope Pius XII:

> Scientific knowledge has its own value in the domain of medical science no less than in other scientific domains, such as, for example, physics, chemistry, cosmology, and psychology. * * * But this does not mean that all methods or any single method, arrived at by scientific and technical research, offers every moral guaranty * * *. There are well-defined limits which even medical science cannot transgress without violating higher moral rules. The confidential relations between doctor and patient, the personal right of the patient to the life of his body and soul in its psychic and moral integrity are just some of the many values superior to scientific interests * * * In the first place it must be assumed that, as a private person, the doctor can take no measure or try no course of action without the consent of the patient. The doctor has no rights of power over the patient other than those which the latter gives him, explicitly or implicitly and tacitly. * * * We come back to the question: Can public authority, on which rests responsibility for the common good, give the doctor the power to experiment on the individual in the interests of science and the community in order to discover and try out new methods and procedures when these experiments transgress the right of the individual to dispose of himself?
>
> In the interests of the community, can public authority really limit or even suppress the right of the individual over his body and life, his bodily and psychic integrity? To forestall an objection, we assume that it is a question of serious research, of honest efforts to promote the theory and practice of medicine, not of a maneuver serving as a scientific pretext to mask other ends and achieve them with impunity. * * * Insofar as the moral justification of the experiments rests on the mandate of public authority, and therefore on the subordination of the individual of the community, of the individual's welfare to the common welfare, it is based on an erroneous explanation of this principle.
>
> It must be noted that, in his personal being, man is not finally ordered to usefulness to society. On the contrary, the community exists for man. * * * Now

medical experiments—the subject we are discussing here—immediately and directly affect the physical being, either of the whole or of the several organs, of the human organism. But, by virtue of the principle we have cited, public authority has no power in this sphere.

It cannot, therefore, pass it on to research workers and doctors. It is from the state, however, that the doctor must receive authorization when he acts upon the organism of the individual in the "interests of the community." For then he does not act as a private individual, but as a mandatory of the public power. The latter cannot, however, pass on a right that it does not possess, save * * * as the legal representative of a minor for as long as he cannot make his own decisions, of a person of feeble mind, or of a lunatic.

We submit, therefore, that the present program of fluoridation of drinking water is in violation of the spirit of the Constitution, that it is consequently illegal, and contrary to ethical morality; also that there are unresolved doubts as to the safety of this program, as no adequate and conclusive experiments have been carried to their logical end to convince us that there is no possible danger to health to all types and ages of individuals.

I would like to just mention that I have a copy of a letter put out by the American Dental Association under date of April 30 of this year, going to all members, urging them, each one, to write their Congressman and Senators and urge the opposition to this bill, giving personal reasons for it, and each member is to write five other dentists, doctors and dentists, and they are to do the same thing.

And, one significant point is this, one of the points that they are told to emphasize is that they believe 1 to 2 parts of fluorine in the drinking water is advisable. Now, we have already gotten up to two parts instead of one, so there is no accurate gage of the amount that is to be put into the drinking water.

The CHAIRMAN. Your time has expired.

Mrs. ADAMS. May I read one other paragraph?

The CHAIRMAN. If somebody will yield.

Mrs. ADAMS. I will not take any more time then. I am sorry.

Mr. Chairman, I have here quite a little volume of petitions.

The CHAIRMAN. You may read a paragraph if you have a special paragraph you wish to read.

Mrs. ADAMS. Oh well, probably I might as well stop. I have here quite a little volume of petitions that have been sent to me from all over the country, from Sandusky, from Florida, from Ohio, and they wanted me to hand them in. I do not know whether this is the proper procedure or not, but they are all signed petitions.

The CHAIRMAN. Well, of course, they could not be made a part of the record. That is our usual custom.

For instance in the hearings held last week, I would say that there were at least 25,000 to 35,000 letters, and petitions, and telegrams that came in and you can readily see how we cannot give the right to some to put petitions in the hearings and deny it to others; but that will be made a part of the file in this hearing, and will be given the attention of the committee when it considers the bill.

Mrs. ADAMS. They just wanted to know that they were filed as evidence.

The CHAIRMAN. Yes, they will be filed and will be before the committee when we give the bill our consideration.

Mrs. ADAMS. Thank you.

(The paper entitled, "Some Objections to Fluoridation," above referred to is as follows:)

SOME OBJECTIONS TO FLUORIDATION

From a letter to Chemical Week, by Vera E. Adams, president, Citizens Committee on Fluoridation, Washington, D. C., which appeared in condensed form under the heading "Water Tempest" in their issue of April 4, 1953:

Many angles seem to be entirely ignored by the proponents of fluoridation, and one cannot but marvel at the cocksure presumption and self-assurance of those who are now pounding their propaganda into the public mind with sledge-hammer insistence. Here are some of those angles:

(1) The unconstitutionality of the mass medication of whole populations, savoring of totalitarianism.

(2) The total disregard for the factor of individual susceptibility, which any reputable doctor deems most important, and which demands individual prescription and some knowledge of the patient's physical and even mental makeup.

(3) The differing condition of health of individuals, many of whom may have organic diseases or predispositions toward abnormal physical conditions which would prevent the proper elimination of fluorine from the body at even an average rate, which is never complete.

(4) The undetermined amount of natural fluorides consumed in food, as various foods contain various percentages of fluorine, in addition to any introduced into the water supply.

(5) The impossibility of gaging the amount of water each individual will drink—1 person perhaps consuming 5 or 6 times as much as another.

(6) The effect of atmospheric and weather conditions on the safe percentage of fluorine to be added to the water supply—such as humidity, excessive heat, and quick changes in temperature.

(7) The more than 99.5 percent of money wastage represented by the mass application of fluorine to the total water supply. Only a very small percentage of water is used for drinking, and a mere 10 percent of the population (children under 8 years) can possibly benefit up to a hypothetical 50 percent reduction in tooth decay. It is the hard-earned tax money of the people which is being poured down the drain in this absurdly costly project, and the people have already registered their protest and will raise their voices still louder at the coming budget hearings.

(8) The fact that 1 part per million is above the margin of safety scientifically arrived at in a study by the University of New Mexico in 1938, which quoted 0.9 parts per million as the danger limit. (See A Study of the Occurrence of Fluorine in the Drinking Water of New Mexico, and the Menace of Fluorine to Health, August 1, 1938.)

(9) The report of findings of the House Select Committee on Chemicals in Food and Cosmetics, which was designed to give the public the results of hearings held in February and March 1952, and which unanimously counseled caution and go slow in the introduction of fluorine into public water supplies pending the conclusion of long-term experiments planned to show up any possible deleterious effects on the human system.

(10) The known difference between naturally and artificiaaly fluoridated water, the first containing organic fluorides and the second inorganic fluorides which the human system cannot assimilate without robbing the body tissues of other necessary chemicals, or minerals.

(11) The difference between natural calcium-fluoride found in water sources, and sodium-silico-fluoride, 2,200 pounds of which is being added daily to our water supply in Washington, D. C.

NOTE.—A California correspondent writes. "Most people do not know that the grade of sodium-fluoride which is used in doping the water contains an adulterant which is arsenic."

(At this point someone in the audience asked a question as to the method of procedure and the method of allotting time. After informal discussion the following proceedings were had:)

The CHAIRMAN. Well, you have understood, have you not, that the time is to be divided equally between the proponents and the opponents, and you have to take that into consideration. That is all I have to say.

(A further question was raised by a member of the audience in connection with time allotted. After informal discussion the following proceedings were had:)

The CHAIRMAN. I do not know the point you are making, but you must agree, I think, that the committee must have the right to determine for itself what witnesses will be called and in what order they will be called. While we do appreciate having the assistance of yourself and others in determining who are to be heard, we must proceed along those lines.

That is the ruling of the Chair at this time.

The next witness will be Mrs. Peder P. Schmidt. You may proceed, Mrs. Schmidt.

STATEMENT OF MRS. PEDER P. SCHMIDT, MINNEAPOLIS, MINN.

Mrs. SCHMIDT. Mr. Chairman and members of the committee:

Point 1: War on crime, and the destruction of this Nation from within by insidious ways, fluoridation the one here to be discussed, the most devilish of all ways concocted, the cleverest concealed, so far.

We have now seen a demonstration of how far.

I would like to show you how long I have known about fluoridation.

That paper was sent to every United States Senator in 1951. I will read this paragraph here.

> I am a native of Denmark, my husband likewise, as a child on my parents' farm in Jutland, over there, a person worked as a maid, substituting, while our regular girl was back in her own home due to illness in her immediate family. * * * This person, I learned later, was a man disguised as a woman. * * * This person told me a great deal, to remember as long as I should live, about world conquest, enslavement, etc.

This person also carried certain emblems, spoke Danish well, plus a number of other languages, tried every which way to be allowed to stay in Denmark, but could not, even tried unsuccessfully to be imprisoned.

This person told me what was behind the happenings of the Russian Revolution in 1905, and that, that same year, from behind, in the new land America, was organized the Rotarian movement, in a way to know what was going on in business around the world—much else—which up until today all have panned out as outlined then in 1909, December, January 1910—so since as an average person have followed politics with interest from the ground up and around the world, especially pertaining to real health, which politicians always leave out of the picture completely.

Yesterday Congressman Wier whose district I live in tried to bar me from testifying. I come from Minneapolis. I am in the 17th month here working on this issue. While Wier did not want to introduce this bill, but I would not go back to Minneapolis and tell them the reasons that he gave. I just wanted a straight answer "Yes" or "No." So then he changed his mind and introduced a bill, but has continually worked against me ever since, and you saw the efforts here yesterday to put me out of testifying on this, by putting it under this district.

The CHAIRMAN. Mrs. Schmidt.

Mrs. SCHMIDT. Yes.

The CHAIRMAN. There has been nothing said or done by Mr. Wier that would justify the criticism that you have just made, so far as this committee has any knowledge.

Mrs. SCHMIDT. All right. Thank you. I am just referring to Miss Adams' statement. I would like to make a few comments.

Grand Rapids, Mich., was represented here yesterday morning. In connection with Grand Rapids, Mich.:

> Reports a felony a day. F. C. Bates, Michigan State Supervisor of Probation, stated "The volume of criminal work from this court alone is as much as the total criminal work in 10 circuit courts covering 25 counties." The increase in gross indecency and child-molestation cases is startling.

Fluoridation is supposed to be the weapon that will be used to take us.

Dr. Nicholas Nyaradi, former Minister of Finance in Hungary's postwar coalition government, an escapee to America states that Comrade Zhuchovitsky, Legal Adviser of the Soviet Ministry of Foreign Trade in the United States, told him of the plan to poison the water reservoirs of this country.

It has been publicized time and time again. We are very close. It is coming very close to home. You do not have to worry about the atomic bomb. They won't be here. They will be taken over, the water reservoirs.

I have in my home copies of this American Review of Medicine from 1946 to 1947 and I'm not quoting from this paper.

There are many articles in the American Review on Soviet Medicine, 1943 to 1948. I have the 1946 and 1947 issues in Minnesota.

This says:

> Fluorine has been used successfully on patients in institutions for the insane in order to destroy the will of the inmates.

When the $11 billion lend-lease went to Russia, Major Jordan was wondering what they were going to use the fluorine for. It was going into the water of the prison reservoirs and the slave-labor camps.

You hear talk about how wonderful this is for the children. In Minnesota it is put into the institutions for the aged people.

Also, may I have this bottle with this fluoride? This shows how much the bath of 30 gallons of water contains. Someone had a little bottle here. This shows how much it is in the Minnesota State Institution for the Aged. They built an $80,000 swimming pool. If those people were not insane, they certainly would be at the age of 70 and 80, with that put into the swimming pool. But here is the amount of fluoride in just 30 gallons of water that can be absorbed by the body. That has been proved and verified. Besides that, the nurses there told me that they are also using tablets of fluoride to put in the water, and for internal baths.

I would like to file this paper here for the record. This is from Mr. ——— ———, who has a lecture at Atlanta, and so he could not be here. This is from Minnesota, and you heard reference to it, and I hope that you gentlemen will see those particular things. I have asked in my statement, which you will see, that this be turned over—whatever you decide on it—this be decided on, and after you have been furnished with it, that it be turned over to the Un-American Activities Committee of the congressional committee to be further investigated.

I brought this to the attention of the proper authorities. And here, I would like for the record to file this, this receipt, to show that it has been turned over to the proper authorities. And here is a telegram from Minnesota people asking that there be a rider attached for a fine and a penalty, to prosecute the violators.

We were told here yesterday that the people had freedom in deciding on this. It was put into the city of St. Paul without the citizens knowing about it. For 2 years they fought it, and then a group of young dentists said that they were going to throw out the old fuddy-duddies and put in new men, young men as aldermen, and then they would put that fluoridation in. That happened.

The Governor of Minnesota's office told me that there was nothing the Governor could do about it, that public health was above the Governor of the State.

On the 9th of March last year I was processed for 2 hours by the Secret Service of the White House and told then that nothing so insignificant as American public health could the President be bothered about.

I am asking this committee if our Governor can do nothing; if our President can do nothing; if John B. Knutson, who is the head of this situation of public health, stated to me—and you will find the quotation in my paper—that this fluoridation program was all right. "I am going to go ahead with it." And said there was nothing Mrs. Hobby can do about it.

When I took it up with Dr. Martha Eliot, of the Children's Bureau, she stated that she had the power and the right, and she was going to enforce this power and that right to force this on every American whether they wanted it or not.

I ask you gentlemen, Is that America?

I would like to file these clippings.

I have asked in my statement that fluoride that is bought in drugstores should be signed for. Anyone can go in and buy this. It is odorless, colorless, and tasteless. It has been known in Europe for the last hundred years. Take a teakettle and boil the stuff in it and let it accumulate, and give a person some tea from that teakettle, and they will be gone. Here are fluoride advertisements, as to how you can go and buy it in any drugstore. Anyone can go in and get it. You can use it on anyone without asking anybody about it.

No doctor would ever sign a death certificate, where death came from use of fluoride, because of the fact it is present in your foods. Here are some clippings from all over the country. Here is the telegram sent to this committee last year asking for an early hearing. Here is the sample of how the doctors and dentists in Minnesota, in Hibbing, put this ad in the paper. That is because the chiropractors there were on the job. Wherever it has been put down in Minnesota it has been done by the chiropractors profession, because they have machines that will show the effects of it, that it is detrimental to the human system, which the medical profession does not have, the machines to detect it.

Here are three articles from New York, the New York Post. Then, in the Washington and in the Minneapolis papers. All of this flooded. This is the same article. It can be syndicated out over the United States, but when the people want to, they cannot get in the papers one thing, when it is voted down. I fought for 3 days with the editors of the Minneapolis papers to get a part of the election records put in that had been voted down 2 to 1 in St. Paul; a part of the election records of November 4, had been voted down 11 to 10 in Hibbing, Minn., on December 2. Three days later they put it in, but

they put it in at the bottom of a paragraph, about how 25 cities in Minnesota had fluoridated and these 2 happened to vote it down. They never mentioned all of the other places where it had been voted down in Minnesota.

These are two places where the people got a chance to vote it down. You spoke of the people getting a chance to vote yesterday. There is no such thing as getting a vote on it. We don't have that. In Minneapolis they cannot vote on it. It is not in the city charter that they have a vote on it.

So, the dentists, and whoever it was behind this, were able to throw out the aldermen that had protected that city for 18 or more years, because they would not go along with fluoridation. They put new ones in. Now, a city of a half a million people is faced with that, and the Governor can do nothing about it, and your President cannot be bothered with it, and the public health has the right and the power to force it in.

We have just one place left and that is you men here, and if we can depend on you men here as to whether this country goes under, or you save it, because what happened in this room yesterday, if that is accepted, that is what has happened to every country, Rumania, Czechoslovakia, Poland, before they took over. They didn't use bonmbs. They went over and took over. The same thing is happening here.

Here, I will file this for the record. This is out of a book by Uncle Joe, how they are going to produce a brand of humans, like you produce different vegetables; like you produce different animals, and stated that it could also be done to men; that men had to be changed; that evolution—man was too slow this way. He had to be changed.

This is from the book by Budu Iwanidsi, My Uncle Joe, and published in London in 1952. These are his words:

> Natural evolution, which is too slow for the present rhythm of technical progress. Men must be converted from a terrestrial animal to a solar universal animal—

and of course if you want to produce something new, you first have to get rid of the old.

I also have a part of a speech given in Bulgaria. I have parts of others given in Budapest, prior to February 1952, when they told the citizens of Budapest, anyone who was not working could get out of the city. What happened to them we do not know. The rest of the people were told to get at one end of the city and they took over the other. Prior to that, 4 weeks in advance, they had given speeches and in that speech stated positively, stated that in America now was the last generation of white children being born, and Dr. Betts showed you in his paper yesterday that the cattle cannot reproduce.

That happened in Germany when Hitler took over.

I am just going to give you this one point and then I will go.

The CHAIRMAN. Mrs. Schmidt, your time has expired. You are 1 minute over now.

Mrs. SCHMIDT. All right.

The CHAIRMAN. But I want you to know that you have the privilege, and the same is true with reference to the other witnesses, to revise and extend your remarks, but it will not be possible to include all of those clippings and articles that you have presented and have on the desk there this morning.

Mrs. SCHMIDT. I would like for these to be left here.

The CHAIRMAN. If you value those, I would suggest that you take them with you.

Mrs. SCHMIDT. I want to show here is a letter. This was written from St. Paul, shows how St. Paul was taken over and there was fluoridation without the citizens knowing anything about it, and they were never given a chance even to vote on it.

I have asked to leave them here. The gentleman tells me he will return them to me.

The CHAIRMAN. Mr. Clerk, will you make a record and see that those that are left with the reporter are returned to Mrs. Schmidt. They are not to be made a part of the record.

(Mrs. Schmidt's statement above referred to is as follows:)

STATEMENT OF MRS. PEDER P. SCHMIDT, WASHINGTON, D. C.

Mr. Chairman, and members of the Committee on Interstate and Foreign Commerce, regarding public hearing on May 25, 26, and 27, on H. R. 2341, water fluoridation, I am requesting to appear as a witness for said bill, representing groups of people from more than 25 States opposed to drinking poisoned water. I will require the full 15 minutes of time allowed to each witness—according to notice.

Point 1: War on crime, and the destruction of this Nation from within by insidious ways, fluoridation the one here to be discussed, the most devilish of all ways concocted, the cleverest concealed, so far. Who were the instigators? Who brought the idea here from Europe? Could it be the group brought over here from Europe by Frances Perkins to set up the so-called social security, or could it be the same group who thought out sending our money plates to Russia?

Point 2: FBI records describe the atom-bomb conspiracy as the crime of the century—a plot from within which took away America's greatest defensive strength. So well did the Communist sympathizers in the United States Government cover up the tracks of the atomic traitors between 1942 and 1945 that news of the stolen secrets was not acknowledged publicly until mid-April 1951 (reference: Hon. Fred E. Busbey, Representative from Illinois, National Republic, Washington, D. C., June 1951, p. 1). Whoever shielded them can be doing the same for the fluoridators. I say, fluoridation is the crime of this millenium, destroying America's human strength.

Point 3: On December 29, 1951, I had been asked to speak on herbs at the banquet of the Minnesota State Vegetarian Society in St. Paul. That evening I asked if I could change the topic to fluoridation of public water, as such had been proposed in Minneapolis and consequently in due time it could be expected to be an issue in St. Paul, or elsewhere. During the discussion period one of the ladies spoke up and said that her brother worked for the waterworks and he had said that they were installing machines for fluoridation and it was to be used beginning January 1, 1952. No one else present had heard anything about it or seen anything in the newspapers regarding it. On checking the newspapers I found that the public health department and other groups had requested the city council to put in fluoridation and on these requests they proceeded to do so. St. Paul citizens had not been consulted at all. On one occasion Commissioner Rosen stated to a citizen bluntly and forcefully, "You are going to get it, whether you want it or not. Exactly the same statement was made in the mayor's reception room in Minneapolis by Mrs. David Youngdahl to members of antifluoridation groups. Her husband, one of the most ardent of fluoride promoters in Minneapolis, on October 31, at a council meeting there where a vote on it had been stopped at 12 to 12, was sitting on a bench beside me when Alderman Stakowski and Wolenski came to tell him how sorry they were not to have been able to do any better for the fluoridation deal. Prior to Christmas 1952, at a "dental clinic" at the Nicollet Hotel in Minneapolis it had been stated in newspapers that about 500 dentists from around the States were expected for the several days' affair. I went there to hand out information on the fluoride question. When the clinic was ended and all were leaving the hall, about every fourth person rejected antifluoridation literature, stating

that they were fluoride salesmen—or salesmen for fluoride-dispensing machinery. Older dentists received the antifluoridation literature gladly. Many of them called me aside, telling me how much they "abhorred the stuff" in any form, that it was most disastrous to have it used for human consumption. They said that it was a change of diet that was needed to avoid bad teeth. Then a group of the younger dentists surrounded me, arguing that fluoridation was good, that "we are going to throw out all the old foddy-doddies—next year—sitting in Minneapolis City Council and put in young progressive aldermen who will put fluoridation in." Their predictions came true. In 1953 they were able to change enough aldermen to now, in 1954, get fluoridation voted in over the protests of Minneapolis citizens—but not yet installed.

Point 4: I spent October 6, 1952, in Austin, Minn., talking to people about what they thought of fluoridation, it having been in their good unchlorinated spring water for about 3 months. A sports goods businessman from the Twin Cities who had kept his minnows in Austin had lost all of them, over $200 worth; they all died the first week that water was fluoridated in Austin. Out of 25 people that I talked to, 24 were opposed to fluoridation. Three women told me that they had been told by their doctors not to use any of the fluoridated water for human consumption; it was wrecking their kidneys, plus other effects on them. Two of them were getting their water for kitchen use from farmers' wells outside Austin, but did not know what they would do when the subzero weather was coming. One of them was the wife of the manager of a theater there; they got spring water shipped from Minneapolis with the truck that regularly brought their films for the theater (Chippewa spring water from Wisconsin). To such inconvenience must people go in this supposedly convenient age to get water fit for human consumption—or be poisoned.

Point 5: On June 12, 1952, I went to St. Cloud to the annual mayors' convention to talk especially to Mayor Johnson, from Duluth. He stated that he was doing nothing about the fluoridation issue as long as public-health officials recommended it—that was good enough for him. I talked to a number of mayors there and found some who had been approached on the subject and I gave them informative literature on the danger of fluoridation, but was then told by a gentleman there to kindly leave or I would be arrested as I could not come there to talk to the mayors in between sessions. I also talked to the mayor from Ely, Minn., who had just a few days earlier found out how dangerous it was, by looking at the labeling of the sacks in which fluoride came (he noticed the skull and cross bones on the sacks and that the men handling them had to wear rubber gloves and used masks equipped with dust filters).

Point 6: On October 20, 1952, I opposed fluoridation in Annandale, Minn. Dr. Jordan, public-health official there, was in favor of it. The man accompanying Dr. Jordan tried to bar me from the room as I was not a taxpayer there. But I was ready for them because my husband and I are owners of Fair Haven Mill property with land in both Sterns and Wright Counties, Annandale being located in the latter. I handed out quantities of antifluoridation literature before and after the meeting (don't think Annandale is fluoridated up to date). When Dr. Jordan was finished with his presentation, the man presiding stated "if no objection, we will then proceed with the fluoridation, etc." It was then that I protested. Dr. Jordan, getting up in rebuttal, stated there was always one opposing it, one fanatic, etc., nodding toward me, that Mrs. Schmidt could always be depended on to oppose, that she is wrong, Milwaukee had voted it in, and "there is no danger connected with the use of fluoridation in such small quantities as 1 point per million to 1.5 per million." (The statement regarding Milwaukee was an outright lie, as practically all else he said also was not true.) I was given no further chance to speak. These are just a few samples of what has been going on across America the last 3 years.

Point 7: From October 21, 1952, until the last meeting January 13, 1953, I held protest meetings in the mayor's reception room in Minneapolis every 2 weeks. I had suitcases of material put on display from all over the world in opposition to fluoridation, plus on one table the material favoring fluoridation so people could see, read, and examine it. Part of the time, some days from 2 p. m. until 10 p. m., or from 6 to 11 p. m., each time for about 2 hours or so, there were speakers to clarify the matter further and to answer questions. On January 13, 1953, I told the group then present that it was no use to think that we could keep on keeping fluoridation out of Minneapolis, or to do anything to stop it on State level, that I was going to Washington to get legislation in on it on Federal level. The group then took up a collection for me which

covered my fare to Washington as I had almost bankrupted my family opposing fluoridation and other measures in earlier years on health and economic topics, etc.

Point 8: Have tried up to now to show you the iron-fist type, un-American way in which this has been forced on the American public. The public's protest in 90 percent of the cases have gone unheeded. When brought up, 70 percent of fluoridation has moved in so swiftly that not until it had been in use for months, would it come to the attention of someone who knew the danger of it, or until from its detrimental effects were felt, it became known among the consumers. About 300 cities either have already thrown out fluoridation, or are in the processes of stopping it. But in such cases has the fluoride been removed or is it still standing by the waterworks, so that at a given signal it can all be dumped in at one time by the Quislings. Have been told that the public water supply does not come under civil defense. To remove the fluoride, and to keep account of any excessive amount of chloride near water works should be a civil-defense matter.

Point 9: When I reached Washington last year the need for legislation against fluoride had not yet penetrated into Congress—no one would touch it; no one I talked to would introduce legislation about it in the Senate. My State Senators refused to do anything about it. Then I started on the House Members. Congressman Judd, who represents part of Minneapolis, refused to have anything to do with the measure. On January 26 I spent several hours, or thereabouts, with Congressman Hon. Roy Wier, who represents my district in Minnesota. When Mr. Wier started to talk about how to have the bill drawn up, I said I would leave it entirely in his hands, that it did not matter too greatly how it was drawn up, as all that would be needed would be to have it declared unlawful due to its destructiveness. That would not infringe on anyone's freedom or take something away from the States; instead it would protect our freedom.

Following this discussion, Congressman Wier then introduced **H. R. 2341** on January 29, 1953. Would suggest that all should be required to sign for fluoride as is required for other dangerous poisons bought in drugstores. (Other poisons can be detected very easily, but not so with fluoride.)

Point 10: On April 17, 1953, at YWCA, 17th and K Streets, NW., Washington, D. C., Dr. Magnusson, Chairman for Truman's "Factfindings on Health," was the speaker at a luncheon. I asked him if he would explain why no material with any mentioning of opposing fluoride was not accepted into "Findings." He immediately answered: "The Commission was for fluoridation". (All, there, present, can testify to this.) But he thought it would take 20 years to tell anything about what it could do to the human race. I, again, asked, "Does that justify making guinea pigs out of every American for the next 20 years?" He answered: "The Commission only recommends, they do not make the laws." When Dr. Magnusson was leaving I had a talk with him; he then admitted to me that it would take a generation to tell what this could do, and even what could follow from it in the next generation, as it definitely did something to all living animal matter.

Point 11: In the 15 months spent here, I have covered a big territory on this subject—have all the subject matter for fluoridation, and find that up to 1951 most was written on the study of organic fluoride, which is naturally in the water. When talking it over with Dr. John W. Knudson, who is the top man in charge of the fluoridation idea, his answer to me was: "There is nothing wrong with fluoridation, and I am going to continue on with the program," adding, gleefully, "and there is nothing Mrs. Hobby can do about it."

In my talks with head of Children's Bureau, Dr. Martha Eliot got further proof of the iron-fist deal. (The Children's Bureau money is being dissipated for this junket and stuff.) Dr. Martha Eliot answered, simultaneously, with a sweeping gesture of her hand, over all the material I had of authorities on the danger of it, "All these know nothing, I have the opinions of those who know" * * *. I finally asked her, "granting you, Dr. Eliot, that you are right, do you feel that you have the power and the right to force this on every American, every mother and child in this country against their will?" Dr. Eliot then go up from her chair, pounding her fist on the table, stating "I have that power and I have that right, and I shall continue to enforce that power on that right." * * * The power and intolerance of the fluoridators are unparalleled in America's history, and was demonstrated in Cincinnati, when Tom McCarthy, station WKRC commentator, who had spoken against fluoridation, was taken off the air. The fact that when fluoridation is voted down it is not mentioned in news-

papers, but when it is voted in, it gets the headlines, should make us all stop and think.

The fear for America under this iron rule is troubling me and millions of others, so am asking this committee that when the fluoride question is settled, regardless of how you may decide on it that the whole situation be immediately turned over to the un-American activities congressional committees for further study, because fluoride has been used for the destruction of much of the public of Europe, and perhaps is as little known to the Europeans as it is to most Americans. Copies of this will go to the Justice Department as I, last year, there, requested that this fluoride structure, or situation, be checked under the new law on security passed in 1953, as no loyalty check has been required in the Department of Public Health and Welfare as far as I know, or have been able to find out about it. With this I will close my requests.

Mr. HALE. Mr. Chairman.

The CHAIRMAN. Mr. Hale would like to ask you a question, Mrs. Schmidt.

Mr. HALE. Mrs. Schmidt, suppose there was a small municipality in my district having a population of say 500 people. Suppose they voted unanimously that they wanted to fluoridate their water supply. Would you say that Congress should prevent them from doing so?

Mrs. SCHMIDT. Sir, the Public Health propagandizes them with millions of dollars.

Mr. HALE. Will you speak louder please. I do not hear you.

Mrs. SCHMIDT. The Public Health is propagandizing the United States with millions of dollars worth of material. The people do not know what they are getting in the cities. They are not told what is happening. They are not told how this goes in. This gentleman, Dr. Brusch told you. They are told about organic fluoride, and they have no proof.

You have not asked them to bring human beings in here, who have been subjected to this chemical fluid for 20 years, to speak about it.

Mr. HALE. I think you can answer my question "Yes" or "No."

Mrs. SCHMIDT. Please restate the question again. You asked me about 500 people.

Mr. HALE. I said suppose that there were 500 people in a small municipality, constituting a municipality in my district, and that they voted unanmously that they wished their water supply fluoridated; wish a certain amount of fluorides in their water supply. Should Congress prohibit that? That is what I want a "yes" or "no" answer to.

Mrs. SCHMIDT. Doctor——

Mr. HALE. Now, you can answer that "Yes" or "No."

Mrs. SCHMIDT. Dr. Sandler——

Mr. HALE. You can answer that "Yes" or "No." I would like to have a "yes" or "no" answer to that question.

Mrs. SCHMIDT. Do you realize murder by remote control? That would be the answer.

Mr. HALE. You can answer the question. You will not answer the question?

The CHAIRMAN. Do you want an answer to the question?

Mr. HALE. It is all right.

Mrs. SCHMIDT. After all, the people——

Mr. HALE. You have refused to answer my question and I do not want to hear any more. I have asked you a question and you have refused to answer it.

Mrs. SCHMIDT. Must the truth not be known in the United States any more? I have stated that if the people knew both sides of the question and were told the truth, there would be no unanimous request.

The CHAIRMAN. Are there any further questions, gentlemen? If not, we think you, Mrs. Schmidt, for your appearance and the interest you have taken in this matter.

STATEMENT OF K. K. PALUEV, RESEARCH AND DEVELOPMENT ENGINEER, PITTSFIELD, MASS.

The CHAIRMAN. Our next witness will be Mr. Konstantine K. Paluev, research and development engineer, Pittsfield, Mass. Mr. Paluev is a fellow of the American Institute of Electrical Engineers.

Mr. HESELTON. Mr. Chairman, in view of the treatment that was given to my colleague, Mr. Pelly, yesterday, I will venture the suggestion, in the hope that the chairman will not be called upon to say anything about me.

I do want to welcome Mr. Paluev here. He is a respected constituent of mine, lives in Berkshire County, and I want to welcome him before the committee.

The CHAIRMAN. We are very pleased to have you, Mr. Paluev, coming from the home community of our distinguished colleague and member of the committee, Mr. Heselton, who already has informed the committee of your outstanding ability. We will be pleased to have the benefit of your statement.

Mr. PALUEV. Mr. Heselton is very kind. Thank you, very much. I am going to try to stay within the 15 minutes, by chopping up of my oral statement, and therefore, I apologize for the lack of continuity.

Mr. Chairman, I do not represent any organization. All my activities in this field are financed by myself. I am not a dentist or a doctor. By education I am an electromechanical engineer with some 30 years' experience in industrial research and development that has nothing to do with health. The natural question, therefore, is why am I here, supporting antifluoridation bill H. R. 2341. I am here because opinion was expressed at 1953–54 fluoridation hearing of Massachusetts legislators, that my analysis should be made known nationally.

I am convinced that the evaluation of the effectiveness and the safety of artificial fluoridation needs help from those who have the temperamental training for research; people who are not scared by charts, diagrams, tables, and arithmetical calculations; who, as a matter of fact, enjoy them, who have the patience to scrutinize them for hours and days if necessary. The profluoridation literature exhibits an extraordinary lack of such training, with the result than an unproven hypothesis with experimental evidence against it, has been presented to professions connected with health and the Nation as a scientific fact and a grand success. A calculated risk promoters call it. The fact is, Mr. Chairman, the risk is badly miscalculated.

This happened, I am convinced, not through an evil intent but rather temperamental inadequacy with enthusiasm rather than mathematical scrutiny prevailing. We are now confronted with a grave national danger. This time, not from a big lie, characteristic of some isms, but with a big untruth, which already has engulfed

some 24 million people, without their consent. Through interstate commerce in foods it threatens the rest of the Nation.

I shall now analyze the data and statements found in published reports on the famous and longest artificial fluoridation experiments, in Newburgh, N. Y., and Grand Rapids, Mich., and in the paper presented by Dr. John W. Knutson, Chief, Division of Dental Public Health of the United States Public Health Service, on January 17, 1952, and published in the New England Journal of Medicine. This analysis will demonstrate that the artificial fluoridation hypothesis has either utterly failed or needs to be experimented with in laboratories for another 10 years at least, and therefore no public water should be fluoridated until then, if at all.

I will limit myself now to the analysis of the effect of fluoride on dental decay. For discussion of possible irreparable evil effect on health, I respectfully refer you to the other part of my pamphlet on "artificial fluoridation—layman's dilemma," given to the committee.

Let us first examine the chronology of eruption of so-called permanent teeth shown on the chart. Along the bottom the 7 types of teeth are enumerated—the molars, the incisors—central and lateral—the second bicuspids, the first bicuspids, the cuspids, and, finally, the second molars. As you know, normally we have 4 teeth of each type, 28 altogether. I will not discuss the eighth type, the third molars or so-called wisdom teeth, because of their transitory nature. The 4 first molars erupt between the ages of 6 and 7 as shown by the solid black. The next to erupt are the incisors. They appear between 6 and 9, as shown. Then come the bicuspids and cuspids. Finally, the four second molars which are the hindmost teeth, immediate neighbors of the first molars. Please note that in Newburgh at the age of 12, the end of the experimental observation, on the average, only 1 out of 4 second molars erupted.

If we take children born in 1940, by 1945, the year of beginning of experimental fluoridation, they were 5 years old with none of the permanent teeth erupted. By 1950, they were 10—their first molars were used for 3 years and the next two types have been used, say 2 years, the remaining 4 types have not yet erupted—altogether, a negligible experience in comparison with a lifetime. The use of 28 teeth of 7 types for say 60 years or 28 times 60 equal 1,680 teeth-years is a measure of a lifetime experience to be compared with 3 times 4 plus 2 times 8 equals 28 teeth-years experience with only 3 types up to 1950 or with one-sixtieth of a lifetime.

Yet the astonishing fact is that on the basis of this negligible and unsuccessful experience, the American Dental Association gave its formal endorsement for national use of artificial fluoridation as an effective and safe method. A little more than a year later, Dr. John W. Knutson had these encouraging words for the future of children raised on an artificially fluoridated water:

> It is their privilege of having straighter, stronger, better looking teeth than than their parents have had; * * * that this protection against dental decay will carry over to the future generation of adults; * * * these benefits are not temporary, they last a lifetime.

Mr. Chairman, as you look at the chart you see that the lifetime of the children we are talking about will expire about the year 2000 and Dr. Knutson's optimism is based, according to the chart, on not more

than 4 or 5 years of experimental study of erupted permanent teeth. A study which revealed, of all things, that artificial fluoridation in all probability not only does not prevent but very likely aggravates dental decay. Yet, Dr. Knutson was so convinced of the social benefits from this measure that in the same article he asked his professional audience, "Why are we quibbling, delaying, pigeon-holing in the face of exhaustive research and overwhelming proof?"

May I now show you, Mr. Chairman, at least some of the reasons for disagreeing with that research was exhaustive and the proof overwhelming:

On this chart I have two tables, both based on the data collected by Newburgh and Grand Rapids researches by 1952, after 6½ years of fluoridation, and what do we find? Table A shows among children of 12 years of age, there was a total of 12 teeth of the 3 types most susceptible to the caries or the bacteriological decay, the only type of dental decay that fluoride is supposed to prevent. As you know, sir, pyorrhea is even more devastating than caries.

Before fluoridation, 8 of these 12 teeth or 66 percent of them were either decayed, filled, or missing after only 4 years of use. The third line shows that 6½ years of fluoridation didn't help much as 6 or 50 percent were found to be decayed, filled, or missing, but the artificial fluoridation hypothesis, so-called by the researchers themselves, promised, as the fourth line shows, that less than 3 teeth or 22 percent of total will decay or be missing after lifetime, that is, 48 years later, by the year 2000.

Now, let's look at table B of children 10 to 12 years old and find the state of their first molars, the only molars erupted by the age of 12. As the artificial fluoridation researchers write in their report, the molars are the principal objective of fluoridation as there are at least six times as many molars in dental trouble as the next most troublesome.

The table shows that of the 4 first molars, on the average, 3.2 or 80 percent were decayed, filled, or missing after 4½ years of use without fluoride. With 6½ years of fluoridation 2.6 or 65 percent became defective after 4½ years use, yet the fluoridation hypothesis promised that there should not be more than one decayed, filled, or missing tooth—or, more precisely, statistically, 0.8 of a tooth on the average—after a lifetime experience, that is, not after 4½ years but 60.

Wouldn't you agree with me, Mr. Chairman, that the promoters' prediction was more a matter of fortune telling than scientific diagnosis? Yet, their claim that artificial fluoridation will reduce decay by 65 percent for lifetime has been repeated across the land by hundreds and perhaps thousands of echo men in and out of dental profession, who preferred to resound what they had heard from high authority rather than patiently scrutinize the data readily available. We are witnessing here one more illustration of how a well-organized, deeply convinced and ill-informed group of people can have a profound ill effect on our national life.

The data showed artificial fluoridation even in a worse light than I so far have presented. Let us examine the next chart where we will compare the increase in number of decayed, filled, and missing teeth with the children's growth. This chart represents conditions found with and without fluoride by Grand Rapids and Newburgh

experimenters. The length of bars correspond to number of defective teeth per child of corresponding age, red for teeth free of fluoride and black after 6½ years of fluoridation.

The comparison of two sets of bars indicates that in fluoridated areas, up to the ages of 8 to 9, either the detection of decay was more difficult or there was a temporary delay in decay. However, the unexpected increase in the rate of fluoridated decay after the age of 9 shows that most likely by the age 14 or at the most 16, fluoridated areas will have more decayed teeth than nonfluoridated. Such possibility is strengthened by the phenomenon peculiar to fluoridated decay revealed on the chart: The number of decayed, filled or missing teeth in fluoridated communities doubled every 2 years, that is, children of 8 years had on the average 1½ decayed, filled, or missing; 2 years later they had twice as many or 3; 2 years later, when they were 12, the number of decayed, filled, or missing again doubled and became 6.

By the age of 14, therefore, it is reasonable to expect that they should have on the average 12 decayed teeth, slightly more than among children of the same age in communities free of fluoridation. Unfortunately, the experimental observation of the effect of artificial fluoridation stops at the age of 12. Unless the experimenters change their routine they will never learn just how long this phenomenon of doubling or compounding decay peculiar to fluoride continues.

There are among the fluoridation promoters those who believe that for the fluoride to be effective it must be partaken from prenatal stage on. Therefore, the discouraging evidence of my charts does not apply, they say, as in the case of Newburgh and Grand Rapids the first beneficiary of the measure will be the children born in 1946. But if so, these children were only 3 years old by 1950 and therefore had only a few milk and no permanent teeth erupted. In the light of this alternative hypothesis the endorsement of artificial fluoridation by the American Dental Association in 1950 and by the Federal Government thereabouts had no experimental basis at all and therefore is still more astonishing.

They should have waited until these children reached the age of 12 at least, that is, until 1958.

I hope, Mr. Chairman, the data presented is sufficient to prove that at best the artificial fluoridation hypothesis remains a hypothesis—an attractive hypothesis, unfortunately prematurely kidnaped from laboratories by monied bureaucracy, obsessed with social benevolence, prostituted across the land by the enthusiastic echomen until it gave birth to a social monstrosity proudly pointed at by the promoters as a new milestone in public health which, I regret, is more likely to become a millstone to the well-meaning promoters and earlier tombstone to the innocent consumers of artificially fluoridated water.

In addition to all this, Mr. Chairman, I, as a citizen, am greatly perturbed by the instability of the official position of the Federal Health Service on this whole question. It was only in 1948 that in a pamphlet entitled "New Discovery Curbs Tooth Decay" Federal Security Administrator Oscar R. Ewing declared that "the only method of proved effectiveness" is the direct or topical application of sodium-fluoride compounds to the teeth; that "its effectiveness in reducing dental decay has been thoroughly established."

A year later, Dr. Knutson, Mr. Ewing's subordinate, published a scientific paper describing his improved method of direct application. Not a word was devoted to artificial fluoridation of public water. Yet 2 years later in a scholastical looking paper which I have already quoted, he is committing the United States Health Service with unbounded enthusiasm to fluoridation of public water, reinforcing his position by quotations from 48 presumably scientific papers with an unexpected exception of his own 1949 paper on direct applications of fluoride to teeth. What disturbs me is not the radical change in the Government's position but the suddenness of change in a matter where new convincing experimental evidence cannot possibly be secured with corresponding suddenness.

We all know of the availability of fluoride-bearing pills. If fluoridists want to experiment with their children the crime and the harm would be limited. Why insist on experimenting with the entire Nation for the possible temporary saving of disguising one little molar, allowing a mighty hoax out of a little molar grow.

Particularly after Newburgh's experimenters declared in their first report, covering only 3½ years:

* * * artificially fluoridated water had the greatest prophylactic effect during the period of this study on the teeth least often attacked by caries.

So even at the early stage, the fleeting "help" was limited to the teeth that help themselves.

The CHAIRMAN. Your time has expired.

Mr. PALUEV. Thank you.

The CHAIRMAN. I have been impressed with the care and precision with which you have testified, based upon your study and expense. You have the permission of the committee to revise and extend your remarks, particularly extend them, if you wish to do so, in the record so that the committee may have the full benefit of the information that you possess.

Mr. PALUEV. Thank you most kindly. I appreciate it.

STATEMENT OF MRS. AILEEN S. ROBINSON, SEATTLE, WASH.

The CHAIRMAN. The next witness will be Mrs. Aileen S. Robinson, Seattle, Wash.

Mrs. ROBINSON. If—the chemical—fluoride, could be proved to be of any benefit to dental health, it would still be highly improper to administer it by the high-handed, compulsory method of adding it to our water supplies. Such treatment is an infringement of individual constitutional rights. At the risk of their lives, their fortunes, and their sacred honor, our fathers fought and died to establish in this country—not a so-called democracy that would allow any majority vote to tyrannize a helpless minority—but a Republic, with a Constitution.

These Founders worked closely and prayerfully with God and they based the whole foundation of our law upon the 10 Commandments. They considered the individual rights of man as so significant that they also included certain amendments called the Bill of Rights, which outlines the law that a majority vote of citizens or officials may not rule upon matters infringing stated constitutional rights of minorities.

The first amendment specifically protects the religious rights of individuals of different faiths—who may depend wholly upon God, and prayer, for their healing. The fourteenth amendment guarantees individual privileges and immunities, and also protects our life and liberty. As was stated by the judge in Shreveport before awarding the injunction against fluoridation on January 5, 1954:

> There is a great difference between adding something to purify the water and in adding something to the water in order to treat the people who drink the water.

Fluoridation is a violation of the provisions of the Pure Food and Drug Act. Such law provides that no deleterious substance may be added to food—and water is defined as food. A beer company was convicted and fined under this law in 1946, for merely having had a trace of fluoride found in their product. And it was not necessary to prove that the amount used was great or small—just the fact that the fluoride should not have been used in food because it is a deleterious substance. Pharmacologists have labeled fluoride as a toxic, protoplasmic poison. Cans of sodium fluoride found on drugstore shelves are plainly labeled "Poison," including the familiar skull and crossbones.

Fluoridation is malpractice because neither Government bureaus, city officials, nor the voting public, has any authority to so prescribe for helpless neighbors and their defenseless little children—for all time, and with no hope of escape from this medication.

Medical monopoly and so-called wonder drugs are not the final answer to the question of health. Millions of intelligent and respected people depend upon wholesome, unadulterated food and drink for healthful daily living—and longevity; and millions have had to turn away from medicine and surgery to other methods.

Honest practitioners of naturopathy, chiropractic, and other drugless healing do not lack for patients, their office are filled with those who are looking away from the drugs and synthetic chemicals. It is only under the Kremlin, the Nazis, or the Fascists that such schemes as water fluoridation could be expected to be found.

Fluoridation got its first promotion from the United States Public Health Service under the Surgeon General and the former head of the Federal Security Agency, Mr. Oscar Ewing, using millions of our tax dollars for every kind of propaganda, deceit, and promotion, and with a total lack of any kind of dental or medical ethics. This malpratice and violation of the Pure Food and Drug Act is still being promoted under the new administration. Even though a clear and decisive mandate of the people one year and a half ago proved that the people demanded a change from this kind of compulsory or socialized medical care. Instead of a correction of these practices, Mrs. Hobby, our new head of the reorganized Cabinet-status Department of Health, Education, and Welfare, it is significant that we still see the violation by one of her departments of the statutes of another of her departments.

We have implored of Mrs. Hobby, and our other officials, to establish an honest administration of her Pure Food and Drug statutes—and to stop this malpractice by the bureaucrats—and with no response from her.

We have seen no correction of the empire-building tendencies of the United States Public Health Service, in fact the opposite seems to be true because certain bills have been recently introduced into Congress that would give increased power to the Surgeon General, and I refer to H. R. 7397 which intends to promote and assist in extension, etc., of Public Health Service—and for other purposes—what purposes? The Surgeon General is empowered to approve or reject any State's health plan * * * and he is "authorized to train personnel for State and local health work," and he may refuse grants—of our tax money—if "in the administration of the plan there is failure to comply substantially with such requirements."

This is the kind of whiplashing we have been watching with regard to fluoridation promotion sifting down into our local health bureaus for years. Senate bill 2778 is much the same as H. R. 7397, and we wonder if our Congressmen are blind to the enormous implications for future health experiments to be foisted upon the citizens by this power-hunting bureau. The United States Public Health Service or, more specifically, the Surgeon General that is mentioned so many times in these two bills. We wonder what next he will plan for us.

We have noticed that the first and foremost promotion for fluoridation comes through the local public-health crowd, and we wonder just how much of our Federal funds are granted to the local bureaus. This Federal money sifting down into our local areas is a direct violation of the intent of the tenth amendment—which leaves to the local level all such matters as the local health problems.

Hundreds of outraged and tormented citizens have petitioned to Mrs. Hobby for a correction of this forced medication—so far with no success—so we urge the enactment of the proper legislation, at the Federal level, in order to free the American citizens.

The United States Public Health Service has spent millions of tax dollars for propaganda such as the large booklets No. 62, given out by the thousands to P-TA members, and so forth; for expensive glamour movies like "A Drop in the Bucket"; for leaflets, and elaborate displays sent all over the country; for travel expense of public-health officials; for various fluoride experiments and costs of processing the so-called statistics; and for making large grants to such States as in Iowa: $36,450 to start 12 fluoride experiments in that State, covering costs of equipment and training of personnel, and so forth, in May 1952. The promoters state that fluoridation has been studied for dozens of years and they probably mean in the natural fluoride areas, ignoring the fact that the artificial fluoride experiments have only been going since 1945.

The dentists and promoters state that "936 communities, including 17 million people, are now fluoridated," implying that these 17 million people are gratified and happy about this treatment. Their method of tallying these 936 communities is strange to say the least, because, for instance, instead of counting Baltimore and Washington, D. C., as 2 cities fluoridated, they add on the other 102 little districts attached to the Baltimore reservoir, plus the 25 attached in Montgomery County, plus the 27 attached in Prince Georges County, and then they add on the other 4 attached to District of Columbia, plus Andrews Field, and they count the whole as about "160 communities fluoridated."

The same kind of tally is used for Pittsburgh, it has attached another 10 little districts, Wilkinsburg has 20 attached, Louisville has 19 attached to their reservoir, Indianapolis has 6, Portsmouth has 7, and Miami and Easton, Pa., both have 7 attached.

In scarcely any one of these cities have the citizens been given any choice in the matter. It has been installed by high-pressured city officials, the same as in Washington, D. C., without allowing the citizens to make their own choice. Indeed, they have scarcely even been allowed to hear the other side of the controversy in their newspapers. In many instances, fluoride has been installed in deep secrecy and no announcement made until weeks later, if at all.

But an outraged and organizing citizenry is now making itself heard. In at least 18 cities the citizens have put a stop to this practice. At great costs they have obtained referendums and thrown out the expensive equipment and supplies. In hundreds of the other cities there are active citizens' committees now demanding a stop to this treatment.

If there is any merit in the use of fluoride it may be easily taken—in an exact, controlled, ethical doseage, by tablets, drops, capsules, and several other methods, at far less cost than if administered by the tons through the water supplies. A 10-cent capsule mixed with a 26-ounce package of table salt—the same as iodized salt—will last for months, cost about 1 cent per month.

Pharmacies carry these products, and this is the only ethical, American way—and it may be stopped when necessary. The promotion for use of thousands of tons of worthless fluorides makes one wonder at the great and significant commercial aspects of this scheme.

Flouridation has been promoted with many techniques and deceits and some of these are revealed in the official Government transcript of that direct testimony of the State dental directors in their fourth annual conference, with the Public Health Service and the Children's Bureau, Federal Security Administration offices, Washington, D. C., June 1951. The featured part of the 3-day program was "Promotion and Application of Water Fluoridation," by F. A. Bull, dental director for the State Board of Health, Madison, Wis.

In his opening remarks the Surgeon General, Leonard Scheele, states that—

> WHO—World Health Organization, had an obligation to concern itself with problems of dental hygiene * * * the fact, too, that funds will now arise in the course of the coming year to the grand level of about $7½ million for the whole world, they are going to make some little start in this field * * *. Its job is to have specialists who can go and set up demonstration programs and consult, do an extensive training program through the device of fellowships * * * obviously one of the biggest things facing us is the catalyzing of a real national program of water fluoridation * * * and you will be having to worry about whether or not glass will turn white and plastics will dissolve and bread taste different * * *

Dr. Bull then addresses the other dental directors as follows:

> Dr. BULL. What are some of the objections (to fluoridation)? The first: Isn't fluoride the thing that caused mottled enamel * * *? You have got to have an answer * * *. Now we tell them this, that at 1 part per million dental fluorosis (mottling) brings about the most beautiful teeth that anyone ever had. And we show them some pictures of such teeth * * *. We don't try to say that there is no such thing as fluorosis even at 1.2 parts per million which we are recommending. But you have got to have an answer * * *. And, in-

cidentally, we never use the term "artificial" fluoridation * * * we call it "controlled fluoridation" * * *. Incidentally, we never had any "experiments" in Wisconsin. To take a city of 100,000 and say, "We are going to experiment on you, and if you survive will learn something" * * *. That is kind of rough treatment on the public * * *. In Wisconsin, we set up "demonstrations."

Now in regard to toxicity * * * I noticed that Dr. Bain used the term "adding sodium fluoride." We never do that; that is rat poison. You add fluorides. * * * But this toxicity question is a difficult one. I can't give you the answer on it. * * * I can prove to you that we don't know the answer to that one, because we had a city of 18,000 people which was fluoridating its water for 6 or 8 months. Then a campaign was started by an organized opposition on the grounds of toxicity. It ended up in a referendum and they threw out flouride. * * * It's tough. * * * So when you get the answer on the question to toxicity, please write me at once, because I would like to know. * * * We think nothing of going to a community and saying, "You should fluoridate your water" * * * when we know it is going to cost them $50 per capita to get their equipment * * * a little hard to handle is the charge that fluoridation is not needed. They talk of other methods and when they get through adding up all the percentages of decay that we can reduce by such methods, we end up in a minus. When they take us at our own word they make awful liars out of us * * * you are going to have to combat it * * *.

Another tough question is that of the liability of the water department. * * * First you need a positive policy by your State dental society and your State board of health * * * a really positive policy * * * get a policy that says, "Do it." That is what the public wants, you know * * * and make it emphatic * * * otherwise they wouldn't need public health people. What are we here for?

* * * publicity that the local fellows can't handle * * * must be gotten out from the State level * * * can come from the State board of health or the fluoridation committee of the State dental society. And that committee can assist in the prefluoridation survey? Is it to find out if fluoridation works? No. We have told the public it works, so we can't go back on that. * * * You want your prefluoridation data, so 3, 5, or any year from now you can go back into these same areas and to the same type of survey and show the people what they have got * * * make it look important enough so you can have it on the State level. And when you do it on that level, don't get somebody on the program who ends up, "But I don't think you should do it." * * * I just came back from a meeting in Seattle, and a fellow said, when he got through with his presentation, "But I could not recommend that anybody do this."

When we are having the press in and the public in, don't have anybody on the program who is going to go ahead and oppose us because he wants to study it some more * * * get over to the newspaper office. * * * They like that * * * they get warmed up. * * * You remind them that the press has been one of the greatest factors in the promotion of public health. You tell them how fluoridation helps the poor devil who can't afford proper dental care. * * * You have got to come out of that local meeting with a resolution from your local dental society. * * * You have got one from the State. You have got one from the State board of health, and one nationally. * * * Let me tell you this: The medical audience is the easiest audience in the world to present this to * * * go before lay groups, service clubs, PTA's, etc. * * * have a sample ordinance all drawn up, so that all they have to do is either strike out something or add what they want, put in the name of the town * * * now present the ordinance to your city council. * * * The officials * * * have seen the reactions * * * of the PTA groups * * * service clubs, union groups, etc.

You have got to knock their objections down. The question of toxicity is on the same order. Lay off it altogether. Just pass it over. We know there is absolutely no effect other than reducing decay, you say, and go on * * * don't bring it up yourself. * * * Let me tell you the PTA is a honey when it comes to fluoridation * * * if you can, keep fluoridation from going to a referendum.

Dr. DeCamp (Florida dental director). I would like, Dr. Bull, for you to go back to Milwaukee and do something to the vitamin products company * * * which recently passed out this pamphlet * * * they were all ready to put the final touches on fluoridation for the city of Tampa, serving 200,000 people. * * * But the major and the city council got copies of this * * * and they tried to turn thumbs down on this thing at once. We were stymied * * * can't you do something about it?

Dr. GLOVER JOHNS (Texas). We have something parallel to this * * *. The University of Texas had a research project on some white mice * * * there was the rumor that this research project indicated that fluoridation of water supplies causes cancer. This had knocked the pins from under us. We don't know how to combat it * * *.

Dr. BULL. I wish I knew the answers * * * two-thirds of the deans of the dental schools of the universities saying that fluoridation is rat poison, and should not be used * * * got to knock them down the best way you can * * *.

Dr. JOHNS. We are preparing a refutation statement * * *. Is that good technique?

(Deceit?)

Dr. BULL. Yes, anything you can do is good technique. I think the best technique is the reverse technique * * * when they say yes, you say no.

(Deceit?)

Mr. MAIER (senior sanitary engineer of division of public health). * * * the criterion that we have been using is that if there is some 10 to 20 percent fluorosis (mottling) in the community that would not be objectionable * * * there is more fluoride being thrown away * * * in * * * industries, than the whole country will ever use for fluoridating * * *.

The above testimony clearly indicates how the so-called endorsements have been obtained for fluoridation, and it is interesting to note that an officer and representative of the American Dental Association, Dr. Phillip Phair, was in attendance at this conference. We can easily now understand just how the endorsement of the ADA was obtained for fluoridation.

During the past few years I have carefully documented and compiled lists of approximately 400 cities that have either defeated or refused or kicked out fluoridation and this list grows so fast I can scarcely keep them up to date. If I wanted to tally this list in the strange manner used by the Public Health crowd and the dentists—by counting all their little "communities fluoridated"—I would add on, for instance, the additional 18 that are attached to Belleville, Ill., when they refused fluoridation, and I could count Belleville as "19 communities." In this method of tally I could very truthfully say that the number of "communities refusing or throwing out fluoridation would be about two or three thousand communities," totaling perhaps about 30 or 40 million people, or more.

Fluoridation has lost its momentum; with all its propaganda, it has come to an almost complete stop as citizens and officials are becoming aware of the other side of the controversy.

In Beverly Hills the city council stated that they "were not qualified to medicate the people." In Daytona Beach the promoters refused to sign legal papers assuming any responsibility for possible damage in that council meeting, so it was defeated.

In Chicago it is now refused by officials for the first time, because of its compulsion, toxic element, the increase of deaths in Grand Rapids, allergies in people, objections of the food industries, and the unanswered questions. In Worcester, Mass., it is declared unlawful for that city, by the city solicitor.

In Ottawa, Ill., there was the usual promotion for fluoridation, then tests were made of their water from the deep wells which showed they already had more than the recommended amount naturally. Their teeth were no better than others (Quincy Herald, November 30). This same kind of fraud was started in Chester, Va., by the promoters, after which it was found that Chester already had more than the correct amount in their water. The dentist admitted that "tooth decay among

Chester children is about as bad as anywhere else" (Albany (N. Y.) Knickerbocker News).

Hundreds of such cities have defeated fluoridation and others have thrown it out because of its corrosive damage to equipment and pipes and the bad results in some of the people. In some 18 or more cities it is now discarded; as in Sheridan, Wyo., where it ate up the pipes in just 3 weeks, and in Williamstown, Mass., it clogged the equipment and failed to operate properly. In Knoxville, Iowa, they couldn't clear the clinkers out of the clogged equipment and no uniformity of dose had been obtained. The whole ugly story was told on radio station KRNT, January 20, 1954.

In Waukeeny, Kans., fluoridation was thrown out and an ordinance passed to prevent any such additions to their water except to purify or soften it.

In New Martinsville, W. Va., it was thrown out because citizens stated, "This is in direct violation of the fourteenth amendment. We demand action."

In Tyler, Tex., it was thrown out by contention "its use is injurious to health and that its presence in public water constitutes enforced medication."

In Delavan, Wis., after a terrific battle by PTA and other press promotion, it was stated that—

* * * the poison hazard is great enough that your city council carries heavy liability insurance—at your expense, of course—in case of public disaster, etc.

Then it was thrown out by vote on April 6, 1954.

And now, let us examine the reports of what has happened to the people. Remember that we have been promised that there have been no bad results from fluoridation. In Akron, Ohio, an attorney stated to the councilmen that—

My wife became ill in January Her mouth became inflamed. It appeared as though she had measles in her mouth. A doctor told us she was suffering from "fluorosis." We obtained new water * * * the inflammation disappeared * * * When I am sick I go to a doctor. I don't go to the junior chamber of commerce. Others said they "itched" all over * * *

Judge Wanamaker * * * said that he has suffered headaches from drinking that "fluoridated water" * * * said those who want fluoride can buy it at drugstores.

Akron then threw out fluoridation.

In Wichita Falls, Tex., still fluoridating until they get their referendum, there are many cases of skin rash and itching. Mr. and Mrs. N. had severe stomach trouble, and both their sons had a "sore itching condition" until they started using pure bottled water. H. E. W. lost minnows in his fishing camp using the fluoride water and had to filter that water through charcoal because the minnows died.

Dr. Parnell can't make his Kolner-Wasserman tests for syphilis with that fluoride water even after distilling it three times, and now has to procure rain water.

In Hastings, New Zealand, where a fluoride experiment was started last year, they are organized now to throw it out, and a resident of Hastings complained through the press that the fluoride water was affecting her mouth.

In San Francisco, still under fluoridation, Dr. Gould's patients have "distressing dermatitis of the whole body, a badly cracked and swollen

tongue, painfully inflamed inner cheeks and deep cracks at either corner of the mouth."

In such cities as Sheboygan, the mottling has begun to show on the teeth of those unfortunate children, and as Dr. Brehmer states, "these teeth are not pretty." The mottled teeth have been noticed in Newburgh, and we must remember that the dental experts have admitted that this could be the case in a certain percentage of the children.

Tormented people in Britain, Wales, Scotland, New Zealand, and Australia have asked for all the information we can send them about other cities, and have implored for a release from the United States inspired fluoride promotion which is stemming from the WHO through traveling fellowships awarded to many foreign health officers who are escorted through our fluoridation experiments and then return to their countries and try to install such experiments in their own countries. We wonder just whose money is paying for all the promotion.

In Milwaukee is a gentleman who had to give up his job delivering mail because he got so sick when he had to drink so much water during the summer months and now has to have bottled spring water near him at all times. In such cities as Lakeland, Fla.; Longview, Wash.; Tallahassee; Cincinnati; Austin, Tex.; and Elyria, Ohio, the expensive equipment has been bought and never used because of the reversed decisions. In Saskatoon, Canada, the officials ordered the machinery but so much opposition has obtained a plebiscite vote for the next election and the $14,000 worth of equipment is not being used.

There has been a great, unending controversy about the increase in deaths in Grand Rapids since fluoridation so we look again at the words of their own health officer, Dr. Prothro, who is quoted in the October 28, 1952, Grand Rapids Press, in addressing the PTA Health Institute, as saying:

> Heart disease deaths in Kent County (Grand Rapids) still are high. Kent has 8 percent more deaths from that disease than any other county in Michigan. There is a high incidence of cancer and accident deaths in the county * * *.

I know a family in Seattle who used a fluoride prescription until they broke out with a strange kind of skin rash, mostly on the neck and chin, so they stopped the use of this dose, and they tried it twice to be sure it was the fluoride that caused the rash both times.

At a great, tremendous cost in time and money spent away from their own little families, hundreds of citizens have battled or organized together to wrest themselves from under the control of this tyrannical Government Bureau. They have had to contend with a vicious dental or medical group, a self-righteous PTA, or misguided chamber of commerce, a domineering Kiwanis Club or Rotary or union organization, in most cases a vicious press, and sometimes even the local legal association has dared to state that fluoridation should be accepted. At the present time, individuals are spending their fortunes in court and in appeals to higher courts to free themselves and all other Americans from the forced medication of these power-grabbing bureaucrats and professional officials.

We would ask that an investigation be made into the improper use of funds by the United States Public Health Service and that examinations be made to see if the schools of public health and our dental schools are promoters for fluoridation because of the grants-in-aid

received from the United States Public Health Service. We ask for a thorough examination of the ethics of both the American Dental Association and of the American Medical Association, and of the American press. And we would ask that the proper department bring to justice all those responsible for the start of the fluoridation experiments upon the American people.

We pray for an early enactment of the bill, H. R. 2341.

The CHAIRMAN. Thank you, Mrs. Robinson. Our next witness is Dr. Leo Spira.

STATEMENT OF DR. LEO SPIRA, M. D., PH. D., M. R. C. S., NEW YORK, N. Y.

Dr. SPIRA. Mr. Chairman, my name is Leo Spira; my address is 344 West 72d Street, New York 23, N. Y.

I am a graduate of Vienna University and I hold the degree of doctor of medicine; I am also a graduate of Prague University, being a doctor of medicine of that university.

For my research work on animals on the subject of fluorine, extended over a period of 4 years, I obtained the degree of doctor of philosophy in medicine at London University.

I am holder of a diploma of member of the Royal College of Surgeons, and licentiate of the Royal College of Physicians, London, England.

I am member of the Medical Society of the State of New York and of the County Medical Society of New York.

I have been approached by very many people from all over the country, ever since I came to live and continue my work here in November 1951, with a request to help in this fight against chronic fluorine poisoning which is bound to come in due course as a result of adding fluorine to the public water supplies. In reply to a question on whose behalf I am giving evidence, I would say that I am talking principally on my own behalf and on behalf of all those who have the same opinion as I have, in the hope that I will be able to convince, through my evidence and through my numerous writings, that adding fluorine to the public water supply is, in my judgment, wrong.

Mr. Chairman and members of the committee, my evidence is going to be confined to the purely medical aspect of the action of fluorine.

Fluorine is a nerve poison. It affects the nervous system: its vegetative section which supplies the inner organs of the body and the endocrine glands, as well as its central and peripheral sections—that is to say, the brain, the spinal cord, and the peripheral nerves. The long-continued daily ingestion of at least 1 milligram of fluorine, equivalent to 1 liter of drinking water with a concentration of 1 part per million a day, is sufficient to cause the first evidence of chronic fluorine poisoning.

Organs regulated by the parathyroid glands—4 glands embedded 1 each in the upper and lower pole of both the right and left lobe of the thyroid gland—are most frequently affected. They are the skin and its appendages, the teeth, nails, and hair.

Damage to the skin is manifested by itching, even without visible cause, by outbreaks of boils and weals, by athlete's foot, and, in more pronounced cases, by eczema in any part of the body.

The teeth undergo changes characterized by mottling, which is produced by the ingestion of drinking water with a concentration of at least 1 part per million during the period of calcification of the permanent teeth—that is to say, during the first 8 years of life. Mottled teeth are universally accepted as the first visible external sign of chronic fluorine poisoning. Its other effects are bleeding of the gums, gingivitis, and pyorrhea.

The nails become so brittle that even a slight accidental knock on a hard object—for example, the edge of a table—causes them to break across. Chalky-white specks, patches, and horizontal lines, closely similar to those observed on mottled teeth, develop on their surface, giving rise to the designation of "mottled nails." The commonest feature is the occurrence of raised longitudinal ridges on the finger and toe nails.

The hair falls out prematurely, leading to a more or less pronounced baldness at an early age.

All these lesions are the result of a disturbed utilization of calcium, which is stored in the body as a material as indispensable to life and health as is oxygen. The calcium metabolism is regulated by the parathyroid glands. If their normal function is interfered with by the deleterious action of fluorine, the body is deprived of calcium, and only the therapeutic administration of a calcium salt will replenish the deficiency and improve the condition of the victim.

Lesions of the organs regulated by the parathyroid glands (skin, teeth, nails, and hair) are frequently accompanied by brown patches of skin on various parts of the body, closely similar to those encountered in chronic arsenical poisoning. They are evidence of a disturbed function of another set of endocrine glands—the adrenals—which regulate the pigmentation of the body. On treatment directed against chronic fluorine poisoning, the brown patches of skin disappear. Other evidence of fluorine affecting the adrenal glands are low blood pressure, general lassitude, tiredness, and lack of energy.

The coexistence of large breasts in young men and of female distribution of pubic hair, giving rise to the designation of "feminized males," indicates that yet other endocrine glands are often affected by the long-continued ingestion of toxic amounts of fluorine.

The fact that all these glands are regulated by the vegetative nervous system indicates that fluorine has a predilection for it at its origin, namely, at the base of the brain.

Moreover, those affected by fluorine in an advanced stage are subject to fits of depression and even melancholia, and to a feeling of apprehension and irritability. It is thus obvious that the substance of the brain itself is involved in these cases.

Neuralgiae in the arms and legs, and attacks of cramps in the calves, occurring mainly at night during sleep, are clear evidence that the peripheral nervous system is likewise affected in chronic fluorine poisoning. There are attacks of "pins and needles," producing the sensation of deadness and numbness in the hands and fingers supplied by the ulnar nerve. It is known that fluorine attacks the ulnar nerve just as lead attacks the radial nerve.

There is severe constipation lasting 2 or 3 days in mild cases and up to 7 days at a stretch in advanced cases of chronic fluorine poisoning. Constipation is associated with excessive gas formation in the bowels

and with attacks of colicky pain in the abdomen. Blisters and cracks form on the mucous membrane of the mouth, causing pain on eating and talking.

The symptomatology of chronic fluorine poisoning, as here recounted, is based on an intensive clinical study which I personally carried out in London, England, since 1922 and, more especially, during the recent war on many thousand recruits, both male and female, serving in the British Army. It was duly recorded in 34 papers published in important medical journals in this country, in Great Britain, and on the continent of Europe.

The subjects examined were not exposed to any industrial hazard of chronic fluorine poisoning, and they were living in communities whose drinking water was either entirely free of fluorine or contained only insignificant traces of the poison, not sufficient to cause mottling of the teeth. It was, therefore, obvious that the fluorine causing these signs and symptoms was derived from sources other than drinking water. In fact, chemical analysis carried out by an expert public analyst revealed traces of the poison in practically all the articles of everyday food and drink examined, albeit only in quantities not sufficient for any one of them by itself to cause the mottling of the teeth and other coexistent signs of the disease.

It is thus not the concentration of fluorine in any one article of food and drink that causes the disease, but the sum total of the poison ingested in the course of the day which must be considered. The average cup of tea, for example, contains as much fluorine as is contained in 2 to 3 tumblerfuls of drinking water with a concentration of 1 part per million of the poison. Sea fish is another important source of fluorine intake, sardines, for example, containing a concentration of as much as 15.6 parts per million. The chemical substances used for sedimentation, filtration, purification, and sterilization of drinking water derived from rivers, lakes, ponds, and so forth, were found to contain large amounts of fluorine.

For spraying fruit trees and vegetables, fluorine compounds are used, and samples of chemical fertilizers were found to contain as much as 400 parts per million of the poison. Dissolved in the soil, it is absorbed by plants and introduced into the body. In the manufacture of aluminum, too, which is widely used in the kitchen, the fluorine-mineral cryolite, is an unavoidable raw material. In the process of cooking, acids and alkalies contained in the food corrode the metal and set its impurities free so as to contaminate the food.

Fluorine is a powerful insecticide, fungicide, and rodenticide, and has replaced arsenical preparations as a preservative added to canned food, fruit, juices, and so forth, since its use is not strictly regulated by law as arsenic is. We are thus in fact surrounded by fluorine and caught in its trap, without being able to escape or to protect ourselves.

Fluorine is a cumulative poison, and the amount accumulated and constantly increased by its daily ingestion with numerous articles of food and drink exerts a suppressing effect on the enzymes, material indispensable for the proper utilization of food and for the maintenance of the organic functions of the body. The harmful effect of fluorine will depend, amongst others, on the susceptibility of the person ingesting it, on the quantity ingested, and on the length of time during which it has been ingested.

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These being the true facts concerning the action of fluorine, there is no need for an undue stretch of the imagination to realize that any increase, however slight, in the amount of the poison ingested is bound to increase the risk and gravity of chronic fluorine poisoning. This is precisely what would happen if to the amount already ingested a further dose would would be added to the drinking water. The margin between the tolerated quantity of the poison and the quantity producing signs and symptoms of poisoning is very narrow. The risk of transgressing the threshold of fluorine tolerance in the older generations, as well as in those chronically ill, suffering, for example, from kidney disease and unable efficiently to excrete the poison, is a very real one.

In view of all these facts, it is utterly impossible to state whether the addition of as little fluorine as would make up a concentration of one part per million in the drinking water could or could not be detrimental to health, since there is no person in the whole country whose body was entirely free from it before a further amount of the poison has been added to the drinking water.

To ascertain that the clinical findings obtained on man were in fact due to nothing but the action of fluorine, I carried out animal experiments at the department of physiology, Middlesex Hospital Medical School, London, England. Gradually increasing doses of sodium fluoride were added to the drinking water of experimental rats. It was observed that, whereas in man the ingestion of drinking water with a concentration of as little as 1 part per million is sufficient to produce mottling of the teeth as the first external visible evidence of chronic fluorine poisoning, in my rats mottling was produced by the ingestion of a water with a concentration of not less than 60 to 100 parts per million of the poison. This means that man is 60 to 100 times more sensitive to fluorine than rats are.

In the course of the experiments several signs of poisoning developed which were identical with those clinically observed on man. The earliest among them was intense scratching without any visible cause. Later on, deep sores developed on the skin in various parts of the body, accompanied by loss of hair. On the scalp a baldness occurred which was very similar in its distribution to the baldness seen in man. On replacing the fluoridated water by distilled water, which is free from fluorine, and on addition of calcium to the food, the sores healed promptly and there was a complete regrowth of hair over the denuded areas.

X-ray examination showed a diminished scrotal shadow, and the testicles degenerated to such a degree that they could be regarded as having to all intents and purposes disappeared altogether.

At autopsy, the thyroid gland was found to have undergone profound changes; it was enlarged and histological examination revealed a lesion similar to that observed in toxic goiter in man.

The kidneys where the organ showing advanced damage; under the microscope they could not be distinguished from those seen in chronic nephritis (Bright's disease) in man.

Several investigators reported the development of gastric and duodenal ulcers in their experimental animals. I could find none in my rats, probably due to the fact that I increased the concentration of fluorine in their drinking water slowly.

The results obtained from the clinical examination on man and from the animal experiment were significant enough for me to try to find out whether they could be utilized in a practical manner for application in certain diseases of a hitherto obscure origin.

A man suffering from chronic nephritis (Bright's disease) in its terminal stage was submitted to treatment directed against chronic fluorine poisoning, after every kind of treatment had failed. After 4 weeks' treatment he was restored to a useful life.

In another man, a gastric and duodenal ulcer, which radiologically had the appearance of malignant degeneration, was completely healed as a result of treatment directed against chronic fluorine poisoning. After 5 weeks, no trace of either of the two ulcers could radiologically be detected.

Children who since birth were for several years afflicted with severe eczema all over the body, for which no external treatment brought any relief, were after 2 or 3 months' treatment directed against chronic fluorine poisoning completely cured without any local applications.

Of two patients suffering from netal illness, which was complicated by the presence of brown discoloration of the skin characteristic of chronic fluorine poisoning, one could be discharged from hospital as completely cured from both mental illness and the pigmentation of the skin following not more than 3 months' treatment directed against chronic fluorine poisoning; the other was considerably improved.

The action of fluorine is practically identical with that of arsenic. In fact, the two poisons occur in nature frequently together. Whereas, however, the methods of detecting even slight traces of arsenic are reliable, those for fluorine have not yet reached the same degree of accuracy.

Further thorough study of the action of even small doses of fluorine is a matter of vital importance. Basing their harmful effect, when ingested with fluoridated drinking water on top of quantities contaminating everyday articles of food and drink, on cursory inspection alone is not admissible. My own endeavor to carry out large-scale treatment directed against chronic fluorine poisoning on a representative number of patients at hospitals for mental and other chronic diseases of a hitherto obscure origin failed mainly because of regulations which decree that, at the age of 65 years, no medical man shall work within the walls of any hospital.

Mr. Chairman and members of the committee, this is a very condensed short résumé of a work which was extended over more than a quarter of a century. In the course of my investigation, clinically carried out whilst I was serving in the British Army, and experimentally at the department of physiology, Middlesex Hospital, Medical School, London, England, every step I took was supervised by my chief and by my colleagues who watched the progress of the work. Needless to say, the results of my work would not have been accepted for publication by the outstandingly important medical journals in this country, as well as in Great Britain and on the Continent of Europe; if they would not have been verified as being based on truth and nothing but the truth. In the course of my investigations, both clinically on man and on experimental animals, I had a large number of lantern slides prepared, and they show every step which I took in the work.

I hoped when I came here that I would be allowed to show you these lantern slides, which I brought with me. Unfortunately, I realize the time is too short and facility is lacking for me to be able to show what I have done.

Should it be necessary, I will be happy to be at your disposal and show these slides. They will depict the story of what my work has achieved better than any spoken or written word can.

Thank you, Mr. Chairman and members of the committee, for having given me the chance to say what I had to say during the very short time at my disposal.

The CHAIRMAN. Dr. Spira, it has been a very great pleasure and very helpful to have had the benefit of the testimony that you have presented to the committee. We realize that it is a result of many years' study and careful observations upon your part and that you are convinced as to the correctness of the views you have expressed.

And Mrs. Robinson, I think, should be commended for the fact that she gave you her time, in order that you might have an opportunity of giving an extended explanation of the work and study that you have made in this matter.

Mrs. ROBINSON. I thought that you would want to hear Dr. Spira and what he had to say.

The CHAIRMAN. I regret that the time is such that we do not have the opportunity of seeing the pictures but if any members of the committee desire at some off-hour to see them, I am sure that you will be glad to show the pictures, if they will so indicate to you.

Dr. SPIRA. Thank you very much. I very much appreciate that.

The CHAIRMAN. The committee will recess until 2 o'clock. In doing so may I announce that there are, according to my list, two witnesses in opposition who have not been heard. That is Dr. Paul Manning and Dr. Max Day. Am I correct in that statement?

It will be the intention of the committee when it meets at 2 o'clock to hear you 2 gentlemen so that the first witness after we reconvene will be you 2 gentlemen.

There have been some who have spoken for the opposition this morning, and that will enable us to give this time to you. After that we will proceed to hear the witnesses in opposition.

The committee will stand in recess.

(Thereupon, at 12:28 p. m., the committee recessed until 2 p. m., of the same day.)

AFTERNOON SESSION

(The committee reconvened at 2 p. m., pursuant to recess.)

The CHAIRMAN. The first witness will be Dr. Max Ginns, senior dental consultant, Worcester City Hospital, Worcester, Mass.

STATEMENT OF DR. MAX GINNS, SENIOR DENTAL CONSULTANT, WORCESTER CITY HOSPITAL, WORCESTER, MASS.

Dr. GINNS. Mr. Chairman and members of the committee, my name is Dr. Max Ginns of Worcester, Mass. I should like to submit this for the record.

(The information submitted by Dr. Ginns has been placed in the committee files.)

Dr. GINNS. So that the proponents may be fully informed, I shall state my qualifications.

I am a graduate of Tufts College Dental School.

I was appointed chief of dental service, Worcester City Hospital, in 1921. Also in charge of dental clinics in the out-patient department.

I was formerly a lecturer on oral diseases at the city hospital Nurses Training School.

I established training for dental interns, city hospital, giving instruction in oral surgery, dental diagnosis, and clinical dentistry.

I was chief dental surgeon, with rank of captain, Dental Reserve, with the 315th Cavalry until 1938.

At present I am senior dental consultant, staff of the Worcester City Hospital.

I served as chairman, 1942, of the Emergency War Study Club dental program.

I was formerly director of Quota Club Clinics.

I am past chairman of the educational committee of State and local dental societies.

I am past chairman of the dental health councils, State and local.

I am a member of the American Dental Association, the Massachusetts Dental Society, and the Worcester District Dental Society.

I was appointed chairman of a special committee to reexamine the proposition concerning fluoridation of Worcester water supply by the local dental society in December 1951.

I was chairman of the Alpha Omega Dental Society in 1951–52.

The CHAIRMAN. You may be seated, Doctor.

Dr. GINNS. As a loyal member of the ADA back in 1946 I, too, was very enthusiastic about topical fluoride treatments for the prevention of decay, until I found out that its value was highly exaggerated. As time went on I gradually acquired information that brought about a reversal of my former attitude.

My visits to Hereford and Amarillo, Tex., and other points in Texas, and then to Newburgh and Kingston, N. Y., and then to Brantford and Stratford, and then to Farnumsville, Mass., 5 miles outside of the city of Worcester, revealed shocking variations, with the one-sided story I had been given, through the ADA and Public Health literature. You shall see for yourselves as I go on with my experiences.

I have had to curtail my talk, so I shall present for your consideration a petition which I obtained from 119 Worcester dentists.

By the way, I have a special delivery that came to me yesterday, to my hotel, from 10 physicians of the Massachusetts Medical Society, who have signified their desire to add their names to the petition of the 119 Worcester dentists opposed to fluoridation.

I should like to read my petition. This as a photostatic copy for your inspection, if you wish, of the original petition. The petition is as follows:

Petition opposed to fluoridation of Worcester water supplies. We, the undersigned Members of ADA, Massachusetts Dental Society and Worcester District Dental Society, having heard, since approval without discussion prior to approval, the other side of the fluoridation plan; and having learned of its dangerous and unscientific nature; that it is not essential to development of good teeth; and that it does not prevent tooth decay; that there are better and

less devious ways to control tooth decay without polluting our water supplies; and compelling an entire Nation to drink medicated water which is of no value to them; which is known to be harmful to all human beings as a slow and accumulative poison; that all benefits attributed to fluorides are not due to flourides at all, but are due to better nutrition, better hygiene, and better supervision. All the foregoing statements, being supported by universities in many parts of the country, by eminent scientists, biochemists, physicians, dentists, we demand that this hollow approval of the Worcester District Dental Society, obtained by telling only one side of the fluoridation story, and blocking every attempt to fully discuss the harmful side of fluoridation.

We demand that this hollow approval be rescinded.

Then follow 119 signatures of Worcester dentists. As I said, now there have been 10 physicians who have sent me this to be added to the list, and there will be more. The list of 10 physicians comes as a result of my talking to the medical society before I left Worcester.

The medical society has been put in a very embarrassing situation. They know nothing about fluoridation, they admit, and many of them do not know it has even been approved. They have never heard of a meeting on fluoridation in the medical society, pro and con. It was simply obtained by a rubber stamp of the medical society, approved by a few of the executives who were good fellows and O. K.'d it. That is all they know about it. They now realize they are in a position where they must answer to the people, because they have been silent too long.

Now I want to speak about home rule and referendum, if I may; home rule against ruling the home.

Fluoridation began in 1945 in Newburgh and Kingston, N. Y., and other pilot areas as a strict secret to be kept under wraps for 10 years. The "strict secret to be kept under wraps for 10 years" has been quoted here. See Public Health Conference June 8, 1951. That document has been quoted here.

It planted its one-sided propaganda without asking the people. Public Health bypassed the medical and dental profession. Public Health arrogated unto itself mandatory powers without any attempt at home rule. They ruled the homes of the communities by pressure and compulsion.

About 1946 topical application to teeth—the swabbing of the teeth—was praised to the skies. They made all the claims for topical that they are now making for fluoridation of water supplies. Topical fell flat in about 2 years, and the rumblings of fluoridation of water supplies were being heard.

A definite pattern developed in our society to control thought and speech. I have here something which you may obtain, perhaps, called Securing Community Acceptance for Fluoridation Through a Citizen's Committee for Fluoridation; the American Dental Association.

Some of these were even printed at city expense in our own city hall, with no identification as to where they came from. They were purported to come from the ADA, but actually they came from city hall.

In this pamphlet, I talked of thought control and speech control. Here is a list of "what you do say and what you do not say." You will notice that this pattern will be followed as a rule by proponents.

Pamphlets of indoctrination What To Say and What Not To Say were mailed to the dental profession. Several hundred were printed at city hall at taxpayers' expense.

Dr. Bull has been mentioned here. In the Journal of the American Dental Association, February 1952, he said,

You must not tell the people. There may be some undesirable side effects. It's another sure way to defeat any or all programs.

Fluoridation went on for 5 years before Public Health accepted it, from 1945 to 1950. Please note. And even in 1950 and as late as June 1951, they admitted they did not know about its toxicity or what its harmful effects might be. These are quotes from their own documents. Reference June 8, 1951.

All along proclaiming to the people "fluoridation was safe," "no harm seen," "3 million people had been drinking it" and so forth and so forth; while wrangling amongst themselves looking for alibis. They were still without an answer to toxicity, and are still without the answer today.

I want to show you gentlemen, if you have not heard about it, in these natural fluoride areas, millions of gallons of Ozarka water are being sold in carload lots in cities in five States. I am drinking it here now, because I will not drink fluoridated water. I may have to take the food, but I am keeping it down to a minimum.

Here is Ozarka water. This is a photostatic copy of the size of the carton. It cost me about $16 to bring it here, but I wanted to show it to you gentlemen. They pay $1 for 5 gallons in these naturally fluoridated areas, where proponents claim "no harm is seen." Why? To avoid mottling decay, gum diseases, and crooked teeth.

The question is often asked: What has crooked teeth go to do with it? As you have heard, fluorine is an antienzyme. There are many authorities for that. Professor Box of the University of Toronto is one of many.

There is interference with bone development, causing a jumbling of the teeth.

In the same year, 1950, one of the reasons you do not see many more dentists willing to come out against fluoridation because the mouthpiece for the dental profession comes through Public Health. I happen to be one of a number who would not yield to this kind of thought control. In the same year of 1950, our dental society Code of Ethics was revised. Section 20 says—and there are many people who do not know about it:

Education of the public. A dentist may properly anticipate in a program for the education of the public on matters pertaining to dentistry, provided, such a program is in keeping with the dignity of the profession and has the approval of the dentists of a community or State, acting through the appropriate agency of the dental society.

I ask you, gentlemen, is this to be our pattern for the future? Are you willing to make your dentists vassals of the State? I for one refuse to become one.

Here is an excerpt from the Dental Health Council, January 9, 1952, Boston, Mass. This comes from the assistant secretary of the Council on Dental Public Health, and it reads:

Almost without exception, administrative changes affecting dentistry are being made with absolutely no consultation with the dental profession in the States involved. It will be necessary to foresee the possibility of such situations and to support positive action before the administrative pattern has been irrevocably changed. Dr. W. Philip Phair, D. D. S.

I want to say, you cannot build hardness into teeth by adding fluoridation. Here are teeth [exhibiting teeth] that come from Aurora, Ill., exposed to fluoridation for years.

Here are teeth [exhibiting teeth] that come from Worcester, Mass., subjected to the same acid influence of lactic acid you find in the mouth.

I defy any public health man to give me a tooth from any area that will not succumb to acid.

The chemico-parasitic theory of Miller, which we all accept as of this time, is the theory of decay, the chemical parasitic theory. It is not a question of hardness. That is a fallacy. It is a contradiction of theory taught in the schools, which is a matter of record in our text books. You can subject any tooth from any area, and it will succumb to acid and become decalcified. It is a matter of chemical environment and not a mechanical hardness.

Here are the teeth to show it, if you would like to see them. [Exhibiting teeth.]

I want to say that fluorine is not essential. In the city of Bridgeport, Conn., where the hygienist originated, Dr. Fones in 1915 to 1918 produced remarkable results by training nurses to be what we now know as dental hygienists. I do not see the dental hygienists on the list of approval of American Dental Association. They are the most closely allied to the dental profession, and they only exist in our offices because Dr. Fones produced a reduction in tooth decay up to 57½ percent in the schools of Bridgeport, Conn., through good hygiene, good nutrition, and good supervision.

If it was done then, it can be done now, which proves fluorides are not essential.

At Farmumsville, Mass., outside of Worcester, we have conducted tests on this.

I have a letter from the State public health department proving that in these natural fluoride areas decay is just as rampant as any place else—5,000 schoolchildren in the city of Worcester were subjected to topical application which was supposed to do everything fluoridation is supposed to do. In 2 years the local public health reported it was a complete failure.

I perhaps will conclude at this point. I do not want to run over into Dr. Manning's time. If there are any questions I would be glad to answer them.

The CHAIRMAN. Any questions, gentlemen? Mr. Heselton?

Mr. HESELTON. Doctor, you quoted from some pamphlet which I believe you had, Things To Say and Things Not To Say. I was not clear as to where that pamphlet was issued. I thought you said it was city hall.

Dr. GINNS. Some of these were printed at city hall, purporting to come from Chicago. This is on the cover. It is marked—

Securing Community Acceptance for Fluoridation Through a Citizens Committee for Fluoridation—

issued by the American Dental Association Council on Dental Health, March 1952; and they must have copies of this. It says here:

Do not say this and do not say that.

I will describe it to you. It says:

Do not use the words "artificial fluoridation." Do not refer to "sodium fluoride." Do not use the words "rat poison."

By the way, they were the first to use the words "rat poison." They were the first, and they object to it now.

Mr. HESELTON. I was interested in the document.

Dr. GINNS. O. K. There is more here.

Mr. WILLIAMS. Mr. Chairman?

The CHAIRMAN. Mr. Williams.

Mr. WILLIAMS. Dr. Ginns, I have been unable to attend these hearings before this afternoon. I must confess complete ignorance on the subject of fluoridation. I have listened to what you have had to say with a great deal of interest.

In the photostat of the newspaper clipping which you passed around among us, I noticed that you are quoted as making reference to the terms "secrecy" and "coercion."

I quote from what you have to say, reading from this clipping:

"The professional societies have lost the ball," Dr. Ginns told a legislative committee.

Going further the article states:

Charging that the fluoridation movement has been advanced "with secrecy and coercion"—

you were quoted as referring to it in that sense.

I am not a doctor. I know nothing about medicine. I hardly know what the bone of contention is in this particular argument, other than that one side says water treated with fluorine will improve the health of the teeth of the people who drink it, and the other side says, as I understand it, that it is a slow poison.

I am just wondering what "sinister" movement, as you would indicate, is behind the fluoridation of water, and what is to be gained by those who seek to have the water so treated, perhaps, other than a sincere desire to improve the health of the public.

Dr. GINNS. Well, if I had the time to go into my complete presentation I could have covered that to a degree. It is quite a lengthy story. I do not know how far you want me to go with it.

I would like to say this: It has been said here this morning that highly eminent authorities have been quoted in favor of fluoridation. Maybe that will answer your question, to some extent, if I quote some authorities.

Mr. WILLIAMS. Is the profit motive involved in any way?

Dr. GINNS. Yes. Beginning, it started with the FSA. They are objecting to Federal interference. It all started with the FSA.

I do not want to mention names. Perhaps I will stay away from that. But Oscar Ewing was Chief of FSA at the time he was chief counsel of the Aluminum Co. of America. It seems to stem from there.

If you will read the Congressional Record, Congressman Miller has referred to it. You will find much of that in the Congressional Record of Congressman Miller a year ago.

I would like to give you some authorities to substantiate that. Dr. Bort G. Anderson, the associate professor of surgery at Yale University School of Medicine, says that this problem cannot be solved by parliamentary maneuvering. Fluorine is not the answer to dental decay.

The Forsyth Dental Infirmary has been mentioned, with Dean Marjerison and, I think, Dr. Herme.

I shall mention Dean Marjerison, now the director of Forsyth Dental Infirmary and formerly dean of Tufts College Dental School, who is opposed to fluoridation. I have it here.

The Guggenheim Foundation of New York City, which is a large clinic, as you know, for the special benefit of children, had experience with topical and found more decay in about 175 children after topical fluoride than before these applications.

Now, the University of Texas has been mentioned here. It is opposed to it. At least some of the professors are; we know about Dr. Taylor.

The University of New Mexico wrote a pamphlet on the menace of fluorine to health.

At the University of Arizona, with 9 to 10 parts per million, the Drs. Smith recommend filtering it out of their water over powdered bone.

I mentioned the University of Toronto. Professor Box has indicated that where fluoridation is present naturally, the prevalence of gum disease is very high.

Whom are we going to believe? Either the schools or the public health men.

Mr. WILLIAMS. My purpose in asking the question was more to try to ascertain the background of this controversy than it was to attempt to distinguish as to the merits of the arguments of the two opposing sides.

I will ask you this question, as to the bone of contention here, as to whether we should or should not permit this to be done. Does the controversy stem from an honest disagreement among men of medicine as to the benefits or the dangers of fluoridation?

Dr. GINNS. It does result from an honest difference of opinion, and it has never happened before in the history of medicine that we have split on an issue. On penicillin or other things we have sat around the table as professional men did and we discussed our problems and we respected each other's opinions.

Mr. WILLIAMS. My question is this: Does this argument stem primarily from that, or does it go deeper and have its roots in some mercenary consideration of some selfish interest group of some kind?

Dr. GINNS. I think it is both, perhaps. It has a mercenary background and it seems to be a blunder on the part of certain men who will not admit that they are wrong, although eventually they will. That is my bone of contention.

We are not advocating it. It has been asked of us:

Do you think public health will deliberately harm the people?

That question should be reversed. We are not advocating anything. It is incumbent upon them, I think the Supreme Court ruled, as I recall, that those who advocate prove beyond a shadow of a doubt that there is no harm to fluoridation. We have the benefit of the children at heart. Are we murderers?

It is put in such a way that you would think that they were the benefactors and that we have no love for children.

I have worked for children all of my life, without any salary, on the city hospital staff, so I have had an interest in children.

Mr. WILLIAMS. Granting that the issue of whether or not fluoridation is good or bad is not and probably will not be resolved for quite

some time; nevertheless if we could set that particular issue aside for the moment and assume that fluoridation were completely harmless, who would profit by adding fluoridation to the water?

Dr. GINNS. Well, you see, it started out with a $7½ million proposition, to begin with.

Mr. WILLIAMS. That is what I am getting to. What is behind this?

Dr. GINNS. $7½ million to begin with. It is in the record. To propagandize.

At the meeting of the child's health conference that is a matter of record. Many millions have been spent since. In 1952 an appropriation of $2 million more was asked for fluoridation. I think the Congress cut that down to $250,000. A month later I read in the Washington report they had taken all the funds away.

Mr. WILLIAMS. Who received that money, and in what way was it spent?

Dr. GINNS. I think that was allotted to the American Dental Association research group. I have it, in the Washington News here.

Mr. WILLIAMS. Do you feel that the profit motive has an influence in the fluoridation movement?

Dr. GINNS. There is the sale of equipment. There is the sale of chemicals which have jumped in price. There are maintenance bureaus, statistical bureaus, and a whole rigamarole of bureaus off one tree. It certainly runs into money.

They talk about 10 or 14 cents per capita to each person, but they do not talk about the millions of dollars that have been spent. That is a matter of record. Anybody who wants to laugh at it can, but it is in here. I do not know whether I have it with me or not. I could not bring everything. Those things are a matter of record.

Yes, there is money in this fluoride bill.

Mr. WILLIAMS. That is all, Mr. Chairman.

The CHAIRMAN. Mr. Hale?

Mr. HALE. Dr. Ginns, do you know historically when the first use of fluoridation in the city water supply occurred in this country?

Dr. GINNS. You see, much of this has been kept a secret, but I do know as far back as 1945 artificial fluoridation came into being. That I do know. That was done at Newburgh; Kingston; Evanston, Ill.: Brantford; Stratford; and some mental institutions in Massachusetts where children who have no way of protecting themselves were subjected to this mass experiment.

Why was it necessary to spend $7½ million to prove by artificial means through artificial statistics a natural phenomena that they claim had already been proved by nature?

Mr. HALE. I do not want to go into that.

Dr. GINNS. Well, that is it.

Mr. HALE. All I want to know is the chronology of the thing.

Dr. GINNS. In 1945 is when artificial fluoridation came in, so far as I know. Artificial fluoridation.

Mr. HALE. Some fluorine—a natural deposit—is in some parts of the country?

Dr. GINNS. Yes, but there is smog, naturally, in some parts of the country. You would not say it was essential everywhere because there was some smog somewhere.

Mr. HALE. Have you any idea how many people in the United States today are drinking water which has some artificial fluorine content?

Dr. GINNS. I can only go by what I read in the public-health records, and they claim it is about 18 million people; but I have shown you in these areas we have an equal amount drinking this and paying $1 for 5 gallons to get away from it.

Mr. HALE. Where does that Ozarka water come from?

Dr. GINNS. From the Ozark Mountains, Eureka, Kans.; and it is wonderful water.

Mr. HALE. I would like to recommend the Poland Spring water from Poland, Maine.

Dr. GINNS. I will drink that, too. I will drink anything but fluoride water.

Mr. HALE. I can assure you that is absolutely pure.

Dr. GINNS. The Poland, Maine, water is good water, and I hope that it can be kept that way.

Mr. HALE. Thank you.

The CHAIRMAN. Are there any further questions, gentlemen? If not, we thank you, Dr. Ginns, for your appearance and the testimony you have given.

Dr. GINNS. Thank you.

The CHAIRMAN. Dr. Paul Manning of Springfield, Mass., a practicing dentist and a consultant in physiological chemistry is our next witness.

STATEMENT OF PAUL MANNING, D. M. D., PRACTICING DENTIST, SPRINGFIELD, MASS.

Dr. MANNING. Mr. Chairman, my name is Paul Manning, a practicing dentist of Springfield, Mass., registered in Massachusetts and in California in the year 1913.

Because some aspersions have been cast upon objections to the massive experiment called fluoridation, I would like to say that the aspersions to the effect that we are incapable of harmonious agreement with our colleagues in the profession—may I be seated, sir?

The CHAIRMAN. That is your privilege.

Dr. MANNING. I would rather stand, sir, unless I am ordered to. I understood that the witnesses were ordered to be seated.

I would like to explain that as a young man I held office in the dental societies. I think it is of no importance, but evidently it has developed in the course of these hearings that it is of some importance to put it in the record, so I put in a matter which in the ordinary course I have deemed unimportant. I wish to conform to the rules and tendencies of the committee to the fullest extent.

Mr. Chairman, we have asked politely to be left out of the massive experiment called by the fanciful and nondescriptive name of fluoridation of water supplies, a term which you will find, I think, in no dictionary; not in any I have examined.

It is a perfect trade-mark. I am quite sure it is registerable as a trade-mark by its inventors. I would like to discover the name of the inventors of the term "fluoridation." If it were possible to do so we would be one step along toward the eventual discovery of the motiva-

tion for what is most certainly the most foolish and unjustifiable experiment ever carried out either upon voluntary or upon involuntary human subjects.

I have attempted a number of times to define "fluoridation." I attempted first to call it "fluorination" and I tried to push my colleagues out of the silly position of inventing a name for a newly invented procedure. The success that I hope for was denied by hard and obstinate attitudinizing on the part of my colleagues who have committed themselves to a vain folly by a method never before conceived or considered by any professional group in the world; refusing to be diverted from their original purpose. So we passed on.

I would like to read to the committee, Mr. Chairman, one of the most exciting pieces of prose—composition—I have ever read either in the scientific line or in the lurid fiction which I may have followed as a younger man. This is an extract which must come in here in my opinion, if you will permit it, in the limited time which is granted, as documenting the arbitrary selection. I would like to put "selection" in quotes if you please, to refer it back to the procedures which were carried on in Nazi Germany historically, to the arbitrary selection of involuntary and unconsenting human subjects of medical experimental research and treatment with fluorides; which is to say, with a fluorine compound, also known as fluorene compound.

The excerpt which I asked to be permitted to make is from Water and Sewage Work, a reputable trade journal with a scientific cast—98:3, March 1951, page 98. The name of the article is, Water Fluoridation at Charlotte, N. C.

This begins with:

While April 1, 1949—

I remind you this is April Fool's Day I am referring to, and that it was chosen with premeditation, which I assert here as opinion—and I am sorry to say with giggles—by men on the public payroll:

While April 1, 1949, was proclaimed as "Fluoridation Day" by the mayor, and a public ceremony was held at the filter plant, at which time the chemical feeder was started, the actual application of sodium fluoride was deliberately delayed until April 25. This period between April 1 and 25 led one Charleston, S. C., newspaper to editorialize on "Fluorinization" due to the fact that Charlotte newspapers had been giving wide publicity to the literally dozens of complaints which had poured into the health and water departments daily concerning killing of goldfish, horrible taste, ruined photographer's films, stained laundry, and so forth.

Now comes a sentence—and this is interpolated—which ends with an exclamation point. A scientific article. There are two sentences here, one following the other, which betray the frame of mind of the author of the paper, if you please, Mr. Chairman.

These and many more undesirables were attributed to fluoride. At the height of public reaction the press sought to correct false impressions by announcing that up to that time no fluoride had been added to the water. Then without further announcement fluoridation was immediately begun and no further complaints were received for about a week, when suddenly the entire ice manufacturing industry reported—

and so on and so on. Just a lot of armchair chemistry follows, and it is not of any importance to you, Mr. Chairman, or to me. This has nothing whatever to do with chemistry.

This wildly uncontrolled experiment upon unconsenting and uninformed human beings has absolutely nothing whatever to do either

with the private practice of dentistry or of medicine or with public-health medicine, preventive or otherwise. I make it as a flat statement, and I am prepared to adduce proof by the simplest of mathematical means, simple arithmetic.

It is hard for a man who has conducted himself honestly in the practice of dentistry for as many years as I have to read that and remain undisturbed, but I am told by our erstwhile friends in public health in the United States Public Health Service—which I want to distinctly differentiate from the employees of those services in all that I say today. I want to make the distinct differentiation between those institutions which when their doors are closed at night remain just piles of stone and the men who inhabit those offices.

It is a very hard thing for a man who engaged in the practice of dentistry to have to listen to what we have heard, Mr. Chairman. I have just read you an excerpt which is supposed to command the admiration of a practicing dentist. I call it the chemical rape of Charlotte, N. C., carried out by premeditation and deceit, using coercion and ridicule as an instrumentality for the attainment of illegal ends on April Fool's Day, with a possible allusion to collusive conspiracy with the press, dependent upon the answer as to whether the press in receiving this flood of complaints had knowledge that the process had been deceitfully and in contradiction of warranty—given those people when they attended the hearings—withdrawn.

An attempt to remedy this situation, which I have given in this brief time only to a small portion, we went first to our professional societies with diligence. Within 24 hours I prepared a protest against these arbitrary moves on the part of men who by the most severe overreaching of authority supposed that they could induct me and my family and my patients into a course of medical experimentation with the most disreputable poison in the whole list of commercial catalogs, and then moving on from the professional societies with only negative results and in some cases ridicule were obtained, a new experience to me, I ask you to believe in the whole of my professional life.

We moved to the people. We went to the grassroots. We found those large gryppers who pick up the minnows, the joiners, the country clubbers were all engaged in advance. They had been preempted. We couldn't reach them. So we went to the grass roots. When you scoop around in the grassroots what do you get? There are different answers. You get America. That has been my experience, and I am ashamed of none of it.

We then went to the executive department of the local government and State government. Having exhausted our resources, not having obtained satisfaction or a reply in many cases, we went to the legislative. We recently had six bills in there, which all have been defeated for this term, the passage of any one of which would have attached a statutory definition of criminal to the overt act of any of those people involved in the arbitrary selection of unconsenting, uninformed human beings for medical experimentation with fluorine compounds.

We will be back in the Massachusetts Legislature. We went there the first year with one bill, and that was put into what a highly placed political elected officer of this State described to me as a limbo for political hot potatoes. It was put into a recess study commission.

I think, quite to the discomfiture of the initiators and conductors of the fluorine experiment, when it had apparently been disposed of in that way we came up with five more bills. I think we can go ahead by geometric progression each year until somebody who is subjected to the osmosis of fluorine, as unfortunately our friends here in Washington are, will give us a fortright response.

It is a peculiar circumstance to have the formal invitation of this committee to a city where the very routine of which we complain is a condition for us to bear the precedent to our acceptance of your invitation.

I ask you, Would it not be reasonable to call for a change of venue in such a case? I certainly wouldn't drink that stuff. I certainly would not permit any of my people, over whom I have control, to drink it. But this is a minor matter, gentlemen. Everyone in this room has gone to high school, and when he was in high school he learned about osmosis.

Osmosis is a physical principle which is ruled over not by this or that party but instead is ruled over by the Creator of the universe whose existence I admit without fear or shame.

When anyone gets in a bathtub in Washington he is separated from the water in the bathtub by a permeable membrane, which is a portion of the definition of the physical principle of osmosis.

In osmosis we have the passage of liquids through permeable membranes from the liquid of lower concentration on one side of the membrane, through the membrane into the liquid of greater concentration on the other side. Recently I think I have compelled the admission of one of the principal initiators, a former dean of Harvard Dental School, in a Boston newspaper of the fact of physics, attested by the Creator of the universe who observes that he is as much bound by the laws of that court which he has set up as is the head of any man-instituted court.

We have the admission that fluorine in the form of sodium fluoride or sodium silico-fluoride, and all the rest of the whole silly list is absorbable by the human body from water used in washing.

My time has run out I sense.

I wish to say this without giving offense to this committee, Mr. Chairman. I regard this committee as friends. The noble sentiments expressed by the chairman for my dear friend, Dr. Robert J. H. Mick, of Laurel Springs, N. J., who is now in the service of his country, were appreciated. They turned my mind from hostility to the chairman of this committee, which was unwarranted if there was any in my heart, to complete admiration.

I am convinced of the fairness of this committee because they are all Americans, Mr. Chairman. But if I can say it without offense, Mr. Chairman and gentlemen, don't soak your bodies in Washington bathwater because if you do the inevitable effects of the operation of the laws of physics will come upon you. I am safe in Springfield. I think I can stake my reputation on it. We will never have this experiment performed on us in Springfield.

I think it is almost a certainty at the present time that unless this is halted by gentlemen who become interested in it it will result in open violence in many places at once and provide that little spark which the professors in Harvard Graduate School of Business Administration talk about in their private talks to their alumni.

I hope it is not offensive to you, Mr. Chairman, for me to say that. I have tried to illustrate by a few words of humility which come from the heart—just don't bathe in it for your own preservation, and the preservation of your services to your country which we value. I say it with the greatest sincerity. If I have exceeded the proper limits of witnesses' testimony, I beg to be excused.

The CHAIRMAN. Doctor, we appreciate the sincerity with which you have spoken and the strong convictions which you have with respect to this matter. I also appreciate the admonition which has been extended to the members of Congress and all other people in the dangers they face. I have been here 26 years. I wish I could have had that advice in the beginning. Maybe I could have lived even longer than I will.

Dr. MANNING. I think an answer is not in order. It is only an observation. The process has been there only during a short period, sir.

The CHAIRMAN. During what time? For how long?

Dr. MANNING. I think only 2 or 3 years. It was put in here about 1951, but that is not for record. We could look it up.

Mr. HESELTON. I want to say Dr. Manning is a neighbor of mine. You have come with an admonition, and I am considerably puzzled at whether I am to remain unwashed during this hot weather.

Mr. HALE. Will the gentleman have to go to Springfield to bathe?

Dr. MANNING. It is a fine thing to do and we invite you most sincerely and we will drink spring water in Washington when it is obtainable.

To answer Representative Heselton, this is the type of a practical question which brings the truth out about this, and our only lack has been that the men to whome we have gone in industry have said, "We are too big for it. We cannot touch it."

Within 24 hours I talked to a number of men who in their estimation think they are substantial businessmen, and I think they are very substantial businessmen, who say "I couldn't touch that with a 10-foot pole."

But it is the type of question which my Massachusetts friend has asked which will bring out the truth about this. It has been said in connection with that kind of question before now that we are trying to get along with our friends, but it has been noticeable to you gentlemen sitting at that desk. There has been no word of communication passed between us who are in favor of House Resolution 2341 and those public-health servants who are now attending the meeting. There is no intercourse whatever there. There is no exchange of opinion.

There is much in the prepared statement I have given along with an equal number of copies of two standard newspapers from Massachusetts, the Standard Times, of New Bedford, and the Springfield Union, of Springfield, Mass., which will illustrate the contentiousness which now arises.

The answer, sir, if I may speak through the Chair, is that I have been here 2 days. I would no more soak my body in a solution of sodium fluoride knowing my—I might be tricked into it—I am very sure that the people in some of these cities which are in the records, and I would describe them to you in detail if I could, I am sure many

people have done so unknowingly, but getting into a tub of it knowingly, no, sir.

Mr. HESELTON. Have you asked that your full statement be made part of the record?

Dr. MANNING. I have the statements here.

The CHAIRMAN. I want to call attention to the fact that the custom of this committee permits the witness to have his statement in full recorded in the testimony, and that will be done in your case as well, doctor.

(The statement is as follows:)

[Copy No. 50]

STATEMENT BY PAUL MANNING IN SUPPORT OF H. R. 2341, A BILL TO PROTECT THE PUBLIC HEALTH FROM THE DANGERS OF FLUORINATION OF WATER

NOTE.—Paul Manning, D. M. D. (Harvard University, 1913 as of 1912); LL. B. (Northeastern University, 1929), is a practicing dentist and a consultant in physiological chemistry. He holds certificates of registration in dentistry from Massachusetts (No. 3268 of November 13, 1913) and California (No. 2758 of December 13, 1913). He became a life member of Valley District Dental Society and of Massachusetts Dental Society in 1950, and through them holds membership in the American Dental Association.

Dr. Manning is the investigator and author of Electrobiolytic Theory of Dental Caries (published in Dental Cosmos (later merged with J. A. D. A.) in LX, 1, pp. 26–30, January 1918; LXI, 1, pp. 21–27, January 1919; LXXII, 4, pp. 354–357, April 1930). The papers cited are believed to represent, as noted editorially in the New York Times, October 2, 1949, page 8E, column 6, how "the writer * * * a practicing dentist * * * in articles in Dental Cosmos, in 1918 and subsequently, originally revealed the basis upon which fluorine effect is obtained."

In 1944 he began the study known as Research 44: The Philosophy of Medical and Chemical Experimentation on Human Beings. In 1949 he organized and has since maintained the information-gathering alliance known as Research 44 Associates, a cooperating group of American citizens who as volunteers conduct independent, lawful inquiries at private expense and who are agreed to continue to do so at least until the ordinary media of news interchange at the national level resume those essential functions which now appear to be either neglected or willfully set aside.

Preliminary statement

This is a petition by Paul Manning, a practicing dentist and chemist engaged in studies on the philosophy of medicine, on behalf of his family, his patients, and himself, to the Congress, through the Committee on Interstate and Foreign Commerce, to denounce and to prohibit with appropriate penalties, those overt acts of administrators and other employees of the public-health services comprised under the fanciful and nondescriptive title of "Fluoridation of Public Water Supplies."

Leave is asked also of the committee to represent such persons as, having seen or heard, and reflected upon, this statement, shall state to the committee that they regard themselves as the voluntary and unpaid associates of Research 44 and request the committee to record them as being in support of this statement and of H. R. 2341.

The question

"Wide is the gate and broad the way" by which the question posed by H. R. 2341 rode into the peace and quiet of this Nation—whether Congress shall support or prohibit the exploitation, by affirmative overt acts of private doctors or civil servants, officials or others, of experiments, tests or trials, of medication, treatment, "supplementation," "nutrition," or other feeding of uninformed, or of unconsenting, human subjects, or of total populations of water-supply areas with fluorine compounds, including such impurities as are always, and without exception, present in those compounds as used.

The list of subordinate questions is very long, as we shall see.

The facts

Outwardly, the prophets of collectivist mass medication who initiate, conduct, and engage in massive medical experimental research and treatment on "the masses" of free American human beings, proposed, to quote them, a "boon for little children," which "could not be obtained in any other way."

Inwardly, the inventors, planners, initiators, conductors and those who engaged in experiments, tests, trials, or treatment, or all of them, upon unwitting, unconsenting human subjects, for money, power to dominate their fellow men, or other undisclosed source of motivation, knew well, or could and therefore should have known, that both their major claims were false and could be shown to be false by clear mathematical proof.

If the foundation claims of the official fluorine therapists are found to be false, as claimed herein, it will be clear that the overt acts of the responsible officials constitute trespasses ab initio upon grounds of authority and upon physical grounds where these officials had no legal right to enter, and this being so, all subsequent acts of theirs were and are illegal, and this is left to the committee to find upon receipt of proof, and to seek to provide protection for us as petitioned.

If a sheriff in serving a writ commits an illegal act such as an unlawful entrance upon real property, e. g., and thereby invalidates all subsequent proceedings in that action, by reason of his trespass ab initio, then surely no reasonable person will hold an unconsented entrance into the human body itself to be otherwise, nor an entry into a human body with agencies or instrumentalities which have been incompletely or fraudulently represented, or with agencies represented to be "harmless when taken as directed," or with agencies represented to be harmful but only to a minor number of persons whose bodily privacy is invaded.

The whole tenor and substance of what we offer as fact, as hearsay believed reliable and as opinion based upon study, will show that the arbitrary "selection" of human beings to serve as experimental subjects of fluorine research and treatment, with which we have been repeatedly threatened, under color of authority by USPHS employees, and by other public health servants who "follow the same line," for more than 5 years, is a trespass ab initio, for which purpose I will offer accounts of overt acts premeditated and carried out by public health employees at Charlotte, N. C., at Newburgh, N. Y., and elsewhere, and published by themselves in proof.

The first major claim of the fluorine therapists, by which term is meant, throughout, the protagonists of fluorine for all via the medium of the public water supply—that metallic salts of fluorine, such as fluoride of the metal sodium, taken several times daily in random 24-hour dosage are a "boon to little children," has been disproved by the fact that dentists themselves "chose to stay away from the show in overwhelming numbers." This fact was disclosed by a survey of homes of dentists over a nationwide extent, made by petitioner, and reported by him in part to his district dental society in November 1950, and upon finding that the members of the society were unwilling to hear the details and incurious as to how the facts were gathered or as to the extent of the survey, it was published in the Springfield Union, January 24, 1951. Leave to incorporate same by reference is requested, with one copy attached.

The second major claim of the fluorine therapy's initiators, that "there is no other way" in which the patient (or the human subject as we may call him if it offends the finer sensibilities of the fluorine therapists to use the term "patient" and so disclose that they have been unable to "clear" a subterfuge term such as the word "supplementation" which they have been using as a noun to avoid terms such as "medication," "chemicalization," and "bodily assault") can safely obtain (sodium) floride than by the method of intake with every drink of water is so absurd a falsehood as to preclude all sober discussion were it not that it is also so truly a Stalinesque-Hitlerian lie that it has fooled a large number of otherwise respectable people. However, this falsehood has been exploded by the principal initiator himself, the Surgeon General of the United States Public Health Service, upon the account by Hon. Alfred Lewis Miller in Congressional Record of March 24, 1952, page 2805, column 1, paragraph 4, lines 13 to 16:

"* * * and Dr. Scheele of the United States Public Health Service, says he gives it to his children in tablet form."

Petitioner holds a letter from a retired teacher in Pennsylvania, containing a contradiction of the quotation above attributed to the Surgeon General of USPHS, in answer to an inquiry of August 30, 1951, to USPHS, reported as follows:

"8. Can sodium fluoride be secured by prescription from dentists or physicians for individual use?"

Copy of a reply from USPHS dated September 5, 1951, is as follows:

"8. There is no safe way whereby the sodium fluoride salt can be used by an individual regardless of the method of procurement." The copy says the letter was signed, "Sincerely yours, Thomas L. Hagan, Dental Director, Acting Chief, Division of Dental Public Health." There is no mention of the position held, believed to be that of major general.

Subsequent written communication from our informant shows informant was in fear of possible reprisals, for having made the inquiry; this being the attitude of a large number of people in many parts of the Nation after they have received from USPHS offices statements of propaganda which directly deny the sense of their inquiries.

While it is recognized that isolated instances of irrelevant response by Government officials to pleas for protection and forbearance, with regard to citizens' having to undergo a known pointless course of medication internally and doctored bathing, might be due to lack of ordinary understanding, or to mistake, on the part of public health officials, the number and kind of returns received by inquirers at USPHS doors is such as to establish the suspicion, in the minds of the receivers of that type of irrelevant reply, that USPHS servants are not so much interested in the general welfare as they are bent upon fastening their momentary medical enthusiasms upon their subjects come what may.

That such an attitude on the part of civil servants has precipitated a state of grave internal dissension throughout the Nation, bordering upon outbreaks of open violence, has been our observation over many months past, and this discontent is observed to be increasing, steadily, as events in San Diego and Boston, in Portland, Oreg., and in Birmingham, and points between, will illustrate when they are investigated.

It is axiomatic that the committee is interested in stopping practices which tend to disturb the faith and confidence of the American citizen in his form of government; however, it is easily ascertainable by any serious inquirer who is willing to take the time and trouble to sample sentiment widely throughout the Nation that the greatest force applied to our people to compel them to drink sodium fluoride solutions, to eat food prepared in those solutions, to undergo absorption of sodium fluoride by dialysis in their baths, and to carry the so-called health measure to the ridiculous extreme of having to wash their underwear and their overalls in what they and we and certain moral food-products manufacturers regard as a filthy mixture, and are certain comprises a dilution of a concentratable deadly mixture, is producing a disrespect for institutions which are inseparable from our Government and which reflect therefore upon our form of government whatever consequences of their overt acts the civil servants of "public health" induce.

Whether we take the reply of the civil servant in USPHS as reported, as a denial that there is any way in which sodium fluoride can be safely used by the individual regardless of the method of procurement, which certainly would include the fluorine-for-all method via the spigot, or whether we regard the reported reply in the light of Major General Hagan's complete record as a principal initiator of the fluorine experimental research and treatment, and consider that he did not mean what he said, but meant instead that he was determined to follow orders he had received to push the fluorine-for-all impressment program at all hazards—an adjustment of his reported rhetoric which we would be very glad to make in the purported copy of his letter—in either case his statement contradicts that of the Surgeon General of USPHS.

The latter's reported admission that children in his home are fed sodium fluoride in tablet form daily could be true, it is entirely possible; whereas the former's denial of all hitherto-recognized therapeutic means of administering sodium fluoride could not be true, as to which proof is offered; nor could his reported statement after adjustment of the rhetoric, to make it mean what his acts say he meant in fact, be true.

The time is ripe, or overripe, to call a halt to United States Public Health employees' insolences, false statements, illicit claims of right, secrecies, and disclaims of personal liability for all the damage resulting from their having alone set in motion the wildly uncontrolled train of damaging overt acts to enforce fluorine therapy upon all living persons.

The USPHS employees, major generals, brigadiers, colonels, lieutenant colonels, majors, captains, and small fry stand estopped, and all others stand estopped from claiming that sodium fluoride is incapable of being administered by graded dosage. It is believe to be a matter for the United States Attorney General to investigate the repeated false assertions of those Government em-

ployees and of all those persons whom they in the exercise of their conclusively presumed superior knowledge persuaded to parrot their censored falsification of information, to determine once and for all the corrupt motivation which actuates those falsifiers, and to take appropriate punitive steps, and I petition you to place the matter before the Attorney General for that purpose, now and before the people of this Nation are more greatly angered.

If those well-established standards of law, of conduct and manner, accumulated by tradition and custom, and spontaneously occurring in new and succeeding generations of just and moral doctors, have remained relatively untested in law until recent years, it may be inferred respectably that this is because it was not until near the midcentury that doctors attained such weighty governmental positions as would, it now appears, provide the opportunity and create the temptation for the most highly placed of those state doctors to discard those tenets of moral legality which had theretofore prevailed, and to substitute for them a set of new principles based upon purely materialistic considerations, and excluding what had been considered, prior to that time, superior standards for appraisal of "public" health adventures (*Double Standards in Medicine: Moral Legality and Law Added to Technology* v. *Moral Legality and Law Rejected*).

Following one set of obligatory studies of drugs and of experimental medical routines by which those drugs are proposed for commercial exploitation, we find men whose thought processes run in planes explored and inhabited (because he found them suitable for human tenancy) by the late Dr. Robert A. Millikan, who the more he explored the science of physics the more he became assured of the worth of the person, in the light of the inevitablity of a Supreme Being.

Under another arrangement of presumed essential studies, to explore "science" while at the same time suggesting no moral obligations to curb excess of "scientific" zeal, we find men with pretensions to power over the mental processes of their fellow men, like Trofim D. Lysenko of the Academy of Science in the Soviet Union, who hold that the state is not only the proprietor of the mind and body of each individual who composes the state, but also the manager of his current opinion. Such men do not hesitate to alter the groundwork of their "scientific" proofs when the executive heads of state require certain conclusions inconsistent with quantitative proof.

It is common among such emotional and nonscientific "scientists" as Lysenko, to accuse all who differ from their official conclusions, of "emotionalism," so that this routine Communist trick-technique provides a signal point for the differential diagnosis by which a Marxian dialectic materialist, especially one who has been deeply indoctrinated in Soviet activism, can be spotted from afar.

May I recommend to the committee the use of this diagnostic sign, with assurances that whatever man decries the normal human emotions as unworthy or dishonorable, or who regards them as a signal for attack, is himself the enemy of humanity, for without emotions there would not be a single human being alive on this planet today; again I say this line of diagnosis, with other tested means at our disposal will identify the enemies of the American state, whether in Government employ or outside it. And the value of the diagnostic sign is more than doubled when in the course of uttering the cry "emotional" the subject or suspected individual is himself engaged in an emotional appeal, the quality of which can be determined by logic. In case of uncertainty as to how this information applies, we have the names of proselytes of the fluorine experiment who have used this line of attack upon our peace and security repeatedly, and over the widest area, indicating that pattern which will become evident as the matter unfolds, of concerted action by more than two individuals to cause, if possible, the American freeman to distrust his own normal mentality and to place trust in planned propaganda which he at the outset regards as corrupt and against his interest, and to cause or to lead him to submit to medical experimental routines which he in the possession of his normal mental faculties, when not brainwashed by mercenary propagandists would reject.

Under the first set of conditions, where problems of moral legality and of law are held paramount in the public interest, we find men looking for the following satisfactions of minimal requirements for the commercial exploitation of drugs and treatment methods, in the order named, from 1 to 5.

This order must be applied to every new medical routine applicable either to individuals or to the public en masse, at the beginning of the period of proof of a drug or medical routine, or at the time of its investigation to determine whether it is suitable, under the means and methods proposed, for use in human medicine:

1. The ethical requirements: What are the facts of public morality? Which is to ask, what is the moral legality of the use of the drug or medical routine?

2. Requirements of man-made law: What bearing have the statutes? As, Shall the statutes forbidding pollution of public water supplies be vacated informally by administrative edicts? What is the application of civil and criminal law, in the light of the moral law which underlies all formalized law? (Note: Here attempts to enter the dialectic materialist, by sidelong approach, having ignored all prior obstacles and safeguards.)

3. The facts of chemistry. Stability, compatibility, uniformity, purity, action, etc. Unless this hurdle is passed without kicking it over, the medical racer is disqualified, as with prior hurdles.

4. The medical facts. Nearly, but not quite the last hurdle, this includes special medical, such as dental medical, facts.

5. The economics of drug administration, including costs and management routines, comparatively with other methods, etc. Enthusiasts of one method have been heard to declare that other methods either do not exist, or are defective, or are immeasurably more costly, or are unsafe, or may result in lower sales for the enthusiasts: for example, all the foregoing examples of trade-jealousy, common alike to the snake-medicine peddler and to the shills who threaten and abuse peaceable people in an effort to compel them to submit to the sodium fluoride beauty treatment, have been exhibited by the professional promoters of forced fluorine for all, in the exploit called "fluoridation of public water supplies."

First things first in medicine

It must be clear that the foregoing considerations, in their proper order, form a series of hurdles, each of which, within the rules against upsetting them, must be passed in turn, in order to obtain approval for any new drug or medical routine.

Would we say, for example, that merely because a drug or other medical routine is cheap, every person must submit to drinking it, eating it, and bathing in it—where he will certainly absorb it by the dialysis which occurs in the operation of the physical principle of osmosis? No, but even before that question arises there are prior hurdles to be passed cleanly.

Or would we say that because, being cheap, we can pass from the last hurdle, at the end of the path, in the wrong direction, toward the starting place, and require all persons, or a single individual, to submit to treatment with any drug or medical routine, "if it promises possible, probable, or sure results," merely because it is cheap or we "guarantee" its effectiveness upon some of our proposed subjects, or because we, as interested parties, claim we know of no harm which will ensue, or because it has been pronounced "good" or a "boon to mankind," or "the greatest health measure since Pasteur," by an executive of government?

That is the position of the fluorine-for-all enthusiasts, as a matter of record, not at all difficult to show.

Intraders: The dialectic materialists of midcentury "public" medicine

At this point, as we retrace the littered path of broken hurdles, we see tearing into the course from the left side, between hurdles 2 and 3, a horde of dialectic materialists headed for hurdles 3, 4, and 5, who are apparently unmindful that the wind of their passage has knocked down hurdles 1 and 2, the existence of which these athletes have pretended to ignore. If anyone can find any remnant of moral philosophy, in the USPHS propaganda for forced fluorine feeding, for the objects of those civil servants' philanthropic dutch treats, a very large number of American freemen would like to have notice of it.

What we, who wish to administer our own materia medica and treatment, have not been able to make understood by polite requests to be let alone is the evident difference between orderly and decent competition for professional reputation which we practice and enjoy, and the forcible methods of the Government-employed fluorine therapists. We would not for a moment consider carrying out an experimental routine without first having given all the information we possess, and a description of the hazards reasonably to be expected, and having awaited respectfully the consent—or refusal—of the proposed experimental human subject.

It does not seem to penetrate what appear to us to be shunt-wound intellects that this late entrance into the race, in disregard of the hurdles of established morality and law, has disqualified such competitors for public favor from orderly and decent competition forever thereafter.

Our case is quite different from that of athletes, who when disqualified may be reinstated after a time of good behavior. In science it is quite otherwise,

because science is not a mere game to "get there first," but only a search for the truth.

In science one who has been found guilty of having but once knowingly taken "a part for the whole" (as in the assumption that the human body is nourished by impurities in drinking water) or of having wantonly violated any other axiom, or of having premeditatedly tampered with his proof-material, is forever ostracized from the company of scientists, he is forever regarded as being of unclean mind, and thereafter he would not be given a job as elevator boy in any well-ordered laboratory, because the proprietors "would not care to have him around."

In the massive fluorine experiments were "scientists" or at least men with pretensions to the fringe of science, on public pay, promoting a medical adventure about which they knew next to nothing, and concerning which they showed the greatest indifference to learn, who not only violated every precept of the materialistic sciences whose dialectics they professed in the most extravagant language to adore, but who required the human objects of their socio-political affections to believe, and to admit, that as privileged beings they, the employees of the public health services, were exempt from all requirements to act under the restraints of moral legality and law which are now and have been for many centuries imposed upon the acts of ordinary men.

Nevertheless just and moral men everywhere, who initiate, conduct and engage in medical experimentation or who expect to be invited to submit to it, will have to examine all of these hurdles in order, attempting with full facts honestly assembled to take each in its turn, and recognizing that to kick over just one of them means disqualification of the entire effort.

This much may be said for those contestants who seek to originate novel or original medical routines—and I know of no more hopeful excuse for them than that they were imbued with discipline of a very high order and of martial type—all may enter and try to win the medical races, and one may try as often as he likes, so long as he observes the rules and does no injury to others or to the rights of others.

But all must begin, even great governments, at hurdle No. 1, the barrier of moral legality or ethics, which is the beginning now, and which always has been and always will be the beginning of acts of license, of permissive use, of acts for hire, and of acts of claimed authority, and if anybody who is entrenched in a castle which he considers impregnable against retaliatory attack is so minded to conduct forays upon the common heard "out in the field" from that vantage point, be sure that with time the stones of that castle will be taken apart one by one, by men's hands if need be, and laid in disorder on the plain as a memorial that barbarism is less worthy of man than is his intelligent conduct.

In the long run as well as in the immediate future, those medical enthusiasts who try to sneak in upon the course of respectable medical progress by the shunt-wound route of the far left between obstacles Nos. 2 and 3, and thus avoid answering to questions of moral legality and law, will find "their public" unhappy about it.

The moral and legal limits of medical research and treatment

"Therefore all things whatsoever ye would that men should do to you, do ye even so to them: for this is the law and the prophets.—Matthew 7:12.

This is, or should be, the doctor's chart, compiled by the Best of Pilots.

Taken as a basis for more than one professional society's official code of ethics, this good law is not an implied license, even though some men clearly consider it to be one, to enter into the body of another for any purpose, lacking the full informed consent of the proposed receiver of benefits.

Only under a distortion of the principle of totality, which is to say the principle of totalitarianism, is there any license presumed to be implied to intermeddle in the life, or the body, or with the mental faculties of a human being, in order to effect a claimed "greatest good for the greatest number." Such an idea is not without promoters today; some or all of the importers of strange European socio-political ideologies profess to know that the individual must be subjugated to the state in all his being, in order that we may have progress.

To one experienced in observing the attempted swift encirclement of this Nation with forced fluorine experimental research and treatment, it is uncertain whether progress will come before bloodshed if the fluorine therapists continue to press with hard obstinacy for meek submission to the totalitarian medicine of fluoridation of public water supplies.

Whether we look at the Golden Rule as hedonistic teaching, as some have claimed, and so force Thomas Jefferson, with his "pursuit of happiness" into hedonistic mold, seems of less importance in the present emergency than to consider the practical effects of dropping the Golden Rule from public-health equipment. The present situation is not without precedent.

Recent effects of political control of medical research

"Do you regard as criminal, experimentation on human beings without their consent?"

This is the question asked by United States Prosecutor James McHaney of the leader of the medical profession under the National Socialist regime in the medical trials before Tribunal No. 1 at Nürnberg. The accused was on trial for crimes against humanity, as reported in Department of State records, and in Doctors of Infamy, a translation of Das Diktat der Menschenverachtung (Henry Schuman, Inc., New York, N. Y.), at pages 156–157.

The answer of the accused began, "It depends * * *" and from that point in the trial his fate moved toward sentence of death by hanging.

The prisoner was further asked, "What difference does it make what type of experiment it is, if the experimental subject has not consented to undergo the experiment?"

"DEFENDANT K———— B————. You may well call it an experiment even when it is only a matter of testing some newly introduced drug. There is the conviction that it will be helpful, but the final knowledge is lacking. Even such a thing can be called an experiment."

(The accused doctor referred to experiments on prisoners and mental patients, adding—)

"There are three aggravating factors with respect to the question of the criminal element in experiments: their involuntary character, the lack of necessity for them, and the danger involved.

"Mr. MCHANEY. In other words, you find situations where it is possible, although the experimental subject does not volunteer, that nonetheless the experiment is permissible, both by way of law and morals? Is that right?

"DEFENDANT. Both may be possible; yes.

"Mr. MCHANEY. You are a doctor. I should think that you are probably rather familiar with malpractice cases and statutes in Germany. Suppose, Herr B———, you tried out a new drug on one of your patients in prewar Germany, without telling the subject about it or asking his consent in any way, and as a result the person were injured by this drug. Would you or would you not be subject to a charge of malpractice?

"DEFENDANT. I should certainly have risked such a charge.

"Mr. MCHANEY. Well, then, I don't quite understand the situation in which you say it is permissible to do something to a person without his consent.

"DEFENDANT. That is why I made the distinction just now, because it is essentially a question of degree of danger. And what you have just said implies an aggravated danger, because lack of consent is added. To my mind this would constitute double aggravation, and if the experiments should also be nonessential, then the ultimate degree of aggravation would have been reached."

(The court proceeded to alleviate the position into which the defendant had placed himself by his damaging admissions against interest. The prisoner was eventually hanged in accordance with sentence imposed by the four United States judges of the tribunal. Like sentence was also executed on a doctor who had formerly headed the German Red Cross, and on two other physicians, as well as a trio of their lackeys.)

Let us see what was happening in the United States in the same years, toward the time when the physical and mental powers of the President were waning, when he no longer exercised a restraining hand on many of the vast governmental enterprises instituted in his long term of influence.

In Water & Sewage Works (155 East 44th Street, New York 17, N. Y.) 98:3, March 1951, pages 98–102, is the account "Water Fluoridation at Charlotte, N. C.," which with other similar accounts illustrates the status of the fluorine experiment.

"While April 1, 1949 was proclaimed as fluoridation day by the mayor, and a public ceremony was held at the filter plant, at which time the chemical feeder was started, the actual application of sodium fluoride was deliberately[1] delayed[2] until April 25.[3]"

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[1] Admission that an act of deception was premeditated for April Fools' Day, and that this was deliberate, i. e., for a purpose.
[2] Representations made with unusual formality admitted falsely made.
[3] Was this a planned and premeditated period? For what purpose?

"Charlotte newspapers had given [4] wide publicity to the literally [5] dozens of complaints which had poured into health and water departments daily [6] concerning killed goldfish, horrible tastes, ruined photographer's films, stained laundry, etc.[7] These and many more [8] undesirables were attributed to fluoride. [9] At the height of the reaction [10] the press sought to correct false impressions [11] by announcing [12] that up to that time no fluoride had been added to the water!"

"Then, without further announcement [13] fluoridation was immediately begun [14] and no further complaints were received [15] for about a week when suddenly the entire ice manufacturing industry reported a severe increase in cracking and shattering of manufactured ice."

The remaining details can await formal investigation, no sign of which has been forthcoming from those law-enforcement agencies charged with detection and punishment of fraud and violence, in the 5 years which have elapsed.

The questions to be asked concerning the points of reporting marked with footnote numbers will occur to any lawyer with experience in criminal trials.

In general, did the chemical rape of Charlotte on April Fools' Day, 1949, by coercion through ridicule, advance the cause of "science" or produce a net benefit for Charlotte's people, even upon the nonhedonistic basis of dialectic materialism or in the totality of arranged Marxian socio-political change or on any other basis known to you?

From Holyoke (Mass.) Transcript-Telegram, March 1951:

"Newburgh Study Shows Problems in Fluoridation."

Following a list of "ridiculous" complaints, ascribed to Newburgh citizens, the prepared article says:

"After letting these arguments build up for several months, health officials knocked them down with one devastating answer:

"No fluorine has yet been introduced into the city's water supply.

"As a result of this strategy, there was no adverse reaction when the injection of fluorine actually began on May 2, 1945."

From Easton (Pa.) Express of March 31, 1954, a Martinsburg, W. Va., dispatch by the Associated Press:

"The city of Martinsburg took advantage of human nature when beginning fluoridation of its water supply. To avoid complaints from persons imagining a new taste or odor in the water, officials withheld for 1 week the announcement that fluorides had been added. There were no complaints."

(Do you regard as criminal experimentation on human beings without their consent? Would this have been an experiment in brain-washing opinions out of Martinsburg heads? Would this be an incitement to riot?)

From Boston Post, April 30, 1953:

"Two Cities Unknowingly Use Fluoridated Water."

"Residents of Salem and Beverly have been drinking fluoridated water since December 7 without knowing it, it was disclosed yesterday.

"Mayor Francis X. Collins, of Salem, himself, did not know that the water he drank each day had been treated until February, 2 months after the experiment got under way. However, he went along with the responsible officials in maintaining secrecy.

"He declared yesterday that the information was withheld from the public to avoid 'crank protests' which might preclude a fair test of the public reaction to fluoridation."

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[4] Does the reporter accuse the newspapers of collusion or conspiracy?

[5] What was the number? Are the original records available and if so produce them.

[6] Assertion of "literally dozens daily," of complaints. Verify.

[7] Name the others represented by "etc."

[8] What ones were "many more"?

[9] Were they rightly or wrongly "attributed" in view of the physical effect on freezing water? How prove? And if no proof, is ridicule reasonable and prudent?

[10] How is a current reaction judged to be "at its height," otherwise than by planning an incitement.

[11] What false impressions as to fraud; as to taste of water; as to "etc."; as to what was to come

[12] Who instigated the announcement and with what future overt acts in mind?

[13] Would this be a double deceit, a one-two punch, a putting of the common herd in its place?

[14] Was withholding of "further announcement" part of the original plans? What do you consider the legal liability for having set up an open ceremony for the public, with the premeditated intention to deceive them on April Fools' Day, and then committing this secret act?

[15] Do you suppose that people once fooled, humiliated in public, derided and embarrassed, would come to you again in hope of humane consideration?

(Witch City mass medication fooled the mayor, too? Why did he choose to condone that series of overt acts? Are important numbers of Witch City people "cranks," in the mayor's estimation? How far does "fairness" extend?

"And what you have just said implies an aggravated danger, because lack of consent is added * * * quoted above from record of the medical trials.)

Add the large number of similar accounts of secret induction of human beings, by arbitrary "selection," to serve as subjects for medical experimentation and treatment, as at Stevens Point, Wis., at Louisville, Ky., Rhinelander, Wis. (6 months of secrecy), Marshfield, Wis. (30 days of secrecy), and many others, for an explanation of why the official German observer at the medical trials of Nuremberg entitled his account "Das Diktat der Menschenverachtung," or The Dictatorship of Contempt for Humanity.

From the record of the medical trials of Nuremberg (see Doctors of Infamy, p. 17), quoting a letter from Heinrich Himmler to his "Dear Comrade Milch" in November 1942:

"Let's not worry about the difficulties. It will take at least another 10 years before we have rooted out this narrowminded approach from our people." (Himmler is referring to freezing experiments carried out on human beings—without consent—"in the interests of the state," as well as to euthanasia experiments to weed out those who for reasons of infirmity or age could no longer replace the value of what they ate.)

From Dental Survey, published at Essex Building, Minneapolis 3, Minn., 28: 1 (January) 1952; page 27. "Fluoridation Slow."

"Dr. Knutson is irritated with the delay, but not discouraged. Regarding his own estimate of 150 years to complete the job nationally, he says, 'Of course it won't take that long. We won't let it take that long. I think it can and should be finished within 5 years'."

(Both timetables were upset: the Nazi timetable with a comparatively liberal allowance for "driving out the narrowminded approach" and the United States Public Health major generals' timetable "earmarking" one-half that time for a vastly more grandiose conquest of the minds and bodies of free men.)

Matters for the committee to resolve, in the same way and upon the same factual basis that large numbers of our people are resolving them in defense against unprovoked and pointless assaults upon their right to privacy of their own bodies and to the management and superintendence thereof, said assaults being prosecuted under the guise of claimed "health" measures called by the willfully and admittedly false and frandulent title of "fluoridation of public water supplies." (See p. 41; par. 4, etc., Proceedings of Fourth Annual Conference, said to have been a secret document of the United States Government's employes, an account of a conspiracy to exercise dominion over the minds and bodies of free Americans.)

As far as the prescribed time for preparation of this statement allows, it is my intention to provide the committee with a list of matters which seem to me to require deep and thorough investigation, constituting "a long train of abuses and usurpations, pursuing invariably the same object, which evince a design to reduce us under absolute despotism," and at variance with the purposes for which the United States Public Health Service was authorized in 1912 with powers granted to "study and investigate the diseases of man and the conditions influencing the propagation and spread thereof."

(Definition: "They," "them," and "their"—except where otherwise indicated—shall relate to these antecedents; the instigators, initiators, and conductors of massive fluorine experiments, tests, or trials upon arbitrarily "selected" uninformed or unconsenting human subjects and like insolvent overt acts of the "public health" regime.)

1. Whether they know that no chemical element can be utilized in human nutrition without first having been passed through the plant barrier and whether all animal life is walled off, and forever prevented, from obtaining nourishment by eating clods of earth, or other inorganic elements or compounds which have not first been passed through the barrier of plant life, and by photosynthesis converted to edible and nutritious substances.

2. Whether this has been published to them and to others by Manning and others, repeatedly, and whether they paid proper attention to the instruction and acted accordingly to forbear their misrepresentations concerning fluorine as a proper nutrient, or whether they did not in fact invent new theories of nutrition and, or, proceed with increased zeal to force the swift accomplishment of their plans?

3. Whether the foregoing informatoin is not elementary and easily proved without any special equipment; whether Manning offered to direct such an experiment—the subjects to be those informed and consenting officials who insist that metallic salts of fluorine are proper additives to the human body, and the subsistence of those subjects to be the entire range of chemical elements, in the form of compounds of those elements, of U. S. P. grade of purity, plus ordinary pure water, but without any of the produce of the soil or of seed production. Whether the invitation was refused? or disregarded? or whether they would like to comment publicly with opportunity for confrontation and rebuttal?

4. Whether the mere absorption and incorporation by plants of mineral elements is any guaranty that the elements so combined will not be poisonous or deleterious, as, e. g., arsenic, lead, selenium, fluorine, and other plant-absorption, the proper replies being well-known to intelligent or chardmen and gardeners?

5. Whether any known chemical substance is incapable of measured dosage, and whether it has been the universal practice among doctors to adjust the dosage of every medicine to the age; weight; heigth; sex; condition of health or disease; condition of growth; conflict with other medication and with food and drink; cyclic function in females and liability to wound-hazard with reference to clotting capacity of the blood; climate; hyther or the comparative values of temperature and humidity as affecting metabolic rates; avoidance of known medicons or substances totaly worthless from a standpoint of medicine, especially those having extensive criminal records as agents for homicide including suicide; allergy or the departure from normal in reaction to a drug; a true, safe, effective and ready antidote operable under a narrow range of tolerance and without undesirable side effects; a definite knowledge of minimum lethal dose per unit of body weight within a respectably narrow range of tolerance upward and downward; sufficient knowledge of the natural history of the disease being treated or prevented to enable the doctor to withdraw the medication when the object has ben reached and before unneeded results or toxicosis occur, and other considerations?

6. Whether they (the initiators, etc., of the fluorine experiment) observed any of those traditional and proved requirements, and so acted, or whether they disregarded some or all of them, and why?

7. Whether they published the statement that "5 grams has caused death," by way of subterfuge, or otherwise, to satisfy dentists and others who relied on them as Government servants? Whether they knew or could have known that 5 grams might kill a large number of people, or possibly kill 15 adult humans or had seen records of such conjecture in standard medical journals?

8. Whether they did not in fact word the statement (7) ambiguously ,in loose terms never used by men of science, in order to confuse and to make more difficult the formation of possibly adverse opinion of dentists and others? Whether they intended to create the impression among dentists that "sodium fluoride is safe," and did so publish, and/or cause to be published and whether sodium fluoride is ever safe for human consumption or even for commercial handling? Whether it is a known fact that all of the handlers of fluorine compounds in water department sheds are and have been absorbing more fluorine than they can eliminate since the start of the experiments?

9. Whether numerous collapses, otherwise unexplained, having been occurring among child patients treated by dentists with topical sodium fluoride applications, and whether the USPHS employees have investigated those collapses, in and out of dentists' offices, as recommended by Manning in 1951? Whether they did or did not advise a Springfield dentist who had reported such a collapse to Manning and who had agreed that a central clearinghouse for such information was necessary to avoid disaster, to break his promise, to disregard a chart form devised by Manning for that tentative purpose of collating such information in the public interest; and did not the dentist obey their injunction to remain silent and not to act, confer, or cooperate; and did not Manning thereafter cease to try to deal with the authors of what he regarded as a leglect of proper professional conduct?

10. Do they not know that sodium fluoride 2-percent solutions and stronger are used by dentists in spray bottles, for direct or topical applications to children's teeth, in reliance on public health employees' statements, and that in a 4-ounce spray bottle there are, at 2-percent concentration, 36 grains, or 2,332 milligrams, of NaF? Whether Gettler & Ellerbrook, in A. J. M. Sc., 197: 625 (May), 1939, recorded the indication that death of an adult human might result from the absorption of as little as 105 milligrans of fluorine?

Whether it is proper to lead dentists to the belief that sodium fluoride is safe when reports that their 4-ounce bottles may contain enough fluorine to kill several adults have never been disproved on any basis?

11. Whether there have been deaths by suicide or other homicide from fluorine compounds, as a direct result of the needless, pointless, unjustified publication by officials of false information that fluorides are safe? How many? Where?

12. Whether their fluorine-for-all propaganda constitutes an open invitation to some psychotic individuals to commit criminal mischief?

13. Whether there had been since about 1928 or 1929 a gentlemen's agreement in our national news press that poisons when used for criminal mischief, such as suicide and murder, would not be named in newspapers and periodicals, and whether the press had not lived up to that agreement nearly 100 percent until the advent of USPHS nationwide propagandization for mass medication with fluorine?

Whether they in fact did not rely upon that known censorship, admitted by all to be in the public interest, as a principal point of control of the press and the press wire services, and whether they did not regard and try to use such cooperation in censoring the miserable facts of all fluorine compounds' toxicity as vital to the swift envelopment of the electorate in their scheme?

14. Whether when they had received timely warning of impending danger to themselves as well as to the entire American public, they heeded that warning as prudent men or whether they did not in fact retaliate with every means within their power and with some outside the scope of their lawful authority, such as incitement of rumors and the condonement of such rumors as accepted public-health methodology, to the effect that their opposers in the ranks of the professions and elsewhere were actuated by ulterior motives, such as inordinate desire for public notice and acclaim, for money, for religious beliefs which the context of those planted rumors showed the public officials held in greatest disrespect? And had they not shortly before criticized publicly those professional men who sought to warn them of the impropriety of their acts, by publishing critical analyses of those acts, under modest pseudonyms so as to avoid public preferment, for having written for publication under pen names?

Whether public health servants must always "take their half out of the middle," or whether there is any way to satisfy their greed for power to dominate their fellow men?

Whether their refusal to accept either of two diametrically opposed positions, as just described, both of which were designed to placate, but only enraged them with their continued rude disregard for polite requests to let our patients and ourselves alone and to leave us out of the orbit of their power, does not in fact indicate that their desire is to incite and provoke open violence?

Whether the every word and act of fluorine activists in a very large number of cities does not suggest to the people they have put in fear, and against whom they claim they have the present ability to carry out the acts they threaten and which in many cases they have carried out, that the only possible working result of those acts and words is a putting in fear and an incitement to breach of the peace?

15. Whether they instigated, or condoned and accepted as reputable "public health promotion," for which billions have been appropriated by recent Congresses, the use of libelous terms, such as the "crackpot" publications of Gerald Judy Cox, Ph. D., regarded by many, and possibly by himself as a principal initiator, and a one-time recipient of the bounty of Mellon fellowships, in Pennsylvania Dental Journal, 17: 279 (Dec.) 1950, republished internationally by ADA in February 1951 and thereafter, and from there applied orally in slanders and in uncounted printed libels over the widest areas, to stifle and coerce into silence all reasoned opposition?

Repeat foregoing examination in the case of Shirley Dwyer, D. D. S., a party to "Fourth Annual Conference," in re Manchester (N. H.) Union-Leader, June 13, 1951. This public health officer refers to the parents and relatives of the tender objects of his solicitude—when they disagree with him—as "the group suffering from starvation of mental ability (that) always feels that the other has something they envy and seek to destroy. * * *"

Repeat examination as to the editor of JADA, the Journal of the American Dental Association: whether he published the statement in the journal in their defense, and whether the libel was republished in a newspaper charging that the people themselves were "insane," and whether either the editor of JADA or USPHS civil servants made any effort to deny or to mitigate this or other

similar continuing libels, evidenced in publications over the length and breadth of the Nation?

Whether it is for such purposes the Congress grants $289 million for "Promotion of public health," and what relation have libel, slander, and vituperation to our health, in the estimation of the committee?

16. Whether they have seen and studied the published figures of Manning, showing that all the children of the United States under sane regimen of graded dosage could not possibly consume more than 100 pounds daily of fluorine as sodium fluoride, even if they were given measured doses 10 times the amount of tentative daily M. A. D. R. dosage for adults of any of the other "trace minerals"? (See the Springfield Union, December 24, 1953, minority report of Massachusetts Study Commission and two bills designed to define "fluoridation" as a criminal act; reprint attached.)

17. Whether they have noted, studied, accepted, refused, or replied to Manning's offer to supply the raw material for 1 year's fluorine medication or "feeding" for all children in the United States, as published in Mount Dora (Fla.) Topic, July 24, 1952, and hereby withdrawn with an offer to renegotiate the original offer directly with United States Public Health Service.

18. Whether they have noted, studied, accepted as true, or rejected Manning's appraisal of their "efficiency," based upon figures of their own "authorities." Armstrong and Brekhus (in Journal, Dent. Res. 17; p. 27, 1938). The difference in fluorine content reported therein to be 69 parts per million in the enamel of "poor" teeth, and 111 parts per million in enamel of "good" teeth or a net "deficiency" of 42 parts per million proposed to be added to presently poor teeth to obtain good teeth, the difference to be made up by fluoridation of public water supplies.

(Whether any explanation by United States Public Health Service is due, concerning what their crystal ball reveals will happen to the bodies of "the percentage of children" who are statictically recognized as destined for good teeth, and for whom, by their own hypothesis, any medication is overmedication.)

(NOTE: In Granite State News, XC, 9 (March 2) 1951, Prof. R. S. Harris noted that "spectrographic analyses have shown that many healthy teeth do not contain fluorine," which refutes the entire hypothesis of fluoridation since if one perfect tooth can be formed without any fluorine whatever, it follows that all teeth can be perfect without fluorine.)

The basis for computing the actual quantity of fluorine, "laid down and installed on the job," and the proper cost of same, f. o. b. the chemical warehouse, using the figures of Armstrong and Brekhus, was published by Manning in Holyoke (Mass.) Transcript-Telegram, February 28, 1951, page 20, showing that in 1 year all of the children of America, even granting that all had poor teeth, which is by no means true, although the United States Public Health Service work on human experimental subjects assumes it could utilize less than one-half pound of elemental fluorine.

Basic facts needed for computation are:

Population of the United States, about 160 million.
Children of "fluorinatable age" not over 25 percent of above, or 40 million.
Weight of enamel of adult teeth, plus 4 grams.
Added fluorine proposed, 42 parts per million.
Florine in sodium fluoride, nineteen-forty-seconds of gross weight of NaF.
Grams in avoirdupois pound, 453.592.
Market price of NaF.

19. Whether in fact, with the utter loss of all controls such as might have served for comparative findings had they been properly managed, the committee will decide, or leave to the Attorney General, the degree of culpability of the principals involved in the disgraceful episode recounted in the infantile language of excuse and avoidance, at page 1500, paragraph 7, of part 3 of the select committee hearings (chemicals in food products, etc., 82d Cong., 2d sess.).

Whether it was in fact true, as alleged under oath, that "They felt they wanted the water fluoridated, so it is being fluoridated, and so we have lost it as a control. But we certainly want to go back each year and do reexaminations."

20. Who were the "they" who "felt" they wanted "fluoridation"? Who so gentle in USPHS as to give in so readily to what "they felt"? Who will do the reexaminations at Muskegon—and why? Surely not for the purpose of quantitative measurements; those are now rendered impossible throughout America, as is well known to the social anthropologists; then for what reason other than dollars and domination?

21. Whether civil servants regard themselves as immune to personal liability merely because they hold Government jobs?

Whether civil servants regard the billions of dollars, billions of windmill words, billions of lost labor-hours, invested by all parties in interest, as an achievement, or as unconscionable waste?

22. Whether the intrusion of preventive medicine into water supply management with 50,000 tons of sodium fluoride annually was a wise and prudent move or a dangerous precedent?

23. Whether fluoridation is not in fact a three-pronged attack, gleefully watched by the enemies of America:

1. To secure a legal precedent once more which was lost some centuries ago, with prescriptive rights in and to the body of the citizen,

2. To obtain the therapeutic and toxicological effects, be they good or bad, of the drug of choice, and

3. To divide the unity of our people in the most critical hour of our history?

24. Whether, even though the first two objects were halted, by passage of H. R. 2341, the third prong of the fluorine assault has not struck deeply—whether this was foreseen at any stage of the attempt and by whom it was foreseen—and with what proper action by him or them, if any?

25. Whether there is one single subversive or enemy agent or indoctrinated fellow traveler who is not head over heels "in favor of fluoridation," as the expression goes? Whether this is because he has been ordered to endorse the scheme?

26. Whether the storage of multiton lots of compounds of fluorine, the essential ingredient of the nerve gas which all nations fear but which several are stockpiling, in ill-defended areas adjacent to main aqueducts of great water supplies, is wise and prudent, or foolhardy and criminal to a degree never before attained in history?

Respectfully submitted.

PAUL MANNING, D. M. D.

SUPPLEMENTARY STATEMENT BY PAUL MANNING, IN SUPPORT OF H. R. 2341

The emergency character of the national situation fomented by illegal claims of right on the part of public health employees to select by purely arbitrary means large numbers of human experimental subjects for fluorine research and treatment raises severe problems of how the public interest may be reinstituted after the period of neglect and active dissipation which that interest suffered while the great conquest was in its upsurge.

It is now well established by what has been said here and elsewhere that massive fluorine therapy, as comprised in the series of representations and overt acts called by the daft and wilfully fraudulent title of "fluoridation of public water supplies," has nothing whatever to do with the practice of medicine or any of its specialists, either of the private practice variety or public-health blend, nor has it anything to do with any economical administration of totalitarian medicine, the last having been shown by the series of simple arithmetical examples given above and published elsewhere, and put in the hands of the committee, by Manning.

When it was found that the acts, as based upon claims of right, comprising the astonishing title of fluoridation did not conform to any of the accepted medical practices then existing or to any of the minimum standards of law, while it did contain all the elements of assault and battery, it was clear the term required a formal definition.

A definition was first evolved by Manning out of the facts of massive fluorine therapy as the practice was introduced by employees of USPHS:

"Fluoridation means the experimental mass medication of total populations by the impregnation of entire water supplies of whole communities with metallic compounds of fluorine incapable of being assimilated as food, under conditions of duress, without cessation, or reasonable chance of escape."

When first published in the Springfield Union of March 16, 1951, the word "experimental" was intentionally omitted from the definition—although it was clearly required on the facts—to invite the officers of those professions most deeply involved in sanctioning and promoting the arbitrary selection of vast numbers of human beings for medical research and treatment with insidiously poisonous fluorine compounds to reconsider, and then repudiate and denounce their unwarranted aggression against the patients and family of the petitioner,

at such time as their moral reawakening might indicate to them the mistake they had made (as I then supposed it to be; however, at about that time it became clear that this was no idle mistake on the part of that hard core of fluorine therapists whose premeditated designs were clearly subject to review by the wealth of legal talent which we knew the Government bureaus involved in the massive fluorine impressment possessed).

It is now history that those professional groups, as groups alone, and always with notable exceptions among the individuals composing them, constantly and with hard obstinacy in the face of repeated warnings diligently pursued, refused to recognize that any consideration outside the pale of dialectic materialism held any regulatory value upon their conduct. If it was the design of such a course of group conduct to "lead us to the very death of brotherly love," through "all the gruff commands, all the unconditional obedience, all the chilly ways of bureaucracy," as the parallel induction of unwilling and unwitting human subjects in concentration camps of Nazi Germany was seen to have done (see appendix: Doctors of Infamy, v. s., p. 165) the reason for that sad state may be read in the definition given above.

When the fluorine-for-all madness was first set in motion by its initiators of the USPHS, the dental profession, for example, held a position in the public regard, consisting of respect and good will in a degree never approached in the history of the world, except, perhaps, in the case of certain members of the clergy and isolated cases of royalty.

Consider the fact that on the mere dictum of dentists who mouthed the statements of their politically chosen officers to the effect that this "was a good thing and ought to be tried," or that it was "a conclusively proven boon to little children" and therefore must be "inflicted as a benefit," large numbers of groupers—heads of organizations relied upon by all propagandists of group control—reiterated their statements without so much as lifting a finger to verify the worth of the claims. No other profession can make that claim. But the respect and good will which the elected and appointed leaders of dental and medical groups held in trust at the onset of the fluorine impressment has undergone a change; in some places it is entirely dissipated, as to the dental and medical groups, although, again, the individuals who by their regular and upright conduct have avoided the blame which attached to their less prudent brethren are still respected as individuals, though the part of their prestige which was appurtenant to the group is gone for the time being and the hour of its return is unpredictable.

That respect and good will which the dental profession possessed in 1949 was not the product of the present generation of dentists, nor wholly of their immediate predecessors, but was a fund built up by temperate and prudent conduct over a period of more than 100 years. It was a fund held in trust, bequeathed by all honest men in the modest accumulations of their lifetimes of forthright and considerate dealing. It has been squandered by spendthrifts who did not even receive one jot of benefit from their spendthrift acts; like worthless stock certificates, the swindle sheets of fluorine promotion gave not even the pleasure of a justifiable spree to those who in reckless extravagance spent what was not theirs to spend.

All the foregoing applies only to the artifice called by skilled propagandists of the United States Public Health Service group action and opinion control in groups, and not at all to the very many members of my profession who without fear of the cost to themselves have openly or covertly opposed as far as lay within their power the designs of the young soviets of public health. The number of these true gentlemen is so large that a list of their names is impossible here; it is far more appropriate to inform the committee that under proper privilege these men can be introduced to the committee's investigators, upon proper assurances that in so doing the opposers of the fluorine swindle will not be subjected to the kind of reprisal which is a matter of public record in more than one city, at the hands of public-health employees or their cohorts who happen to occupy power positions, for merely having attempted (in some cases unsuccessfully) to protect their patients against chemical rape; and if any of these kind friends choose to endorse this statement or any part of it and exclude the rest, may they be permitted to do so by the committee.

Last of all, I wish to bring to the attention of the committee, if possible, the small part which my personal experience has brought to bear upon the problem of forceful attempts to induct peaceable people into medical experimentation and treatment for which they have antipathy. It began as a strictly scientific study when in the years about 1915 to 1922 and thereafter I investigated the

electrochemistry of the human mouth. The results were published as listed on the cover page of this statement and possibly in a few other journals, including the Pacific Dental Gazette.

Fluorine is the most extremely electronegative of all the elements. This means that in a circuit of electrical flow fluorine will be cathodal toward any other element. That means that fluorine can never be anodal toward any other element.

In brief, fluorine when immersed in an electrolyte, like the human saliva, will always be in a potential position to receive ions of other elements, but will not give up ions (permanently at least) to other elements. The cathode in an electrical circuit is always on the receiving end—that is, negative, and the position toward which ions flow—while the anode is on the giving-up end, or positive end, and undergoes loss of ions, or erosion. This is common knowledge among electroplaters, such as electrotypers.

The human saliva, being a workable electrolytic solution, supports electrolysis, electrophoresis, and all manifestations of electrical action. In one side of the electrolytic process going on in the mouth, slowly but fairly constantly under some conditions, ions transferred out of the solution of solids called the saliva are often, though not always, due to modifying conditions, laid down upon tooth surfaces by electrodeposition, in just the same way that stain is deposited out of solution in a coffeepot, requiring regular scouring to keep it free of the deposits. When this occurs it is called salivary calculus or tartar.

Tartar is electrically deposited on some teeth, and on some more than on others. The reverse process is present at times, in which the teeth clearly take on an anodal character, losing mass and leading to the condition described as a disease condition called dental caries or tooth decay. The process is measurable. The process can be set up artificially, not only by a dentist but by anybody who chooses, of his own free will, to place a pure silver band about the neck of a tooth and leave it there. When such a silver band is allowed to remain about a tooth for a period of but a few weeks, an artificially produced lesion of dental caries occurs beneath and around the silver band, thus one of the basic requirements of proof of responsibility of a causative agency for a disease, in this case the disease of dental caries, is satisfied.

This is not a new observation, the recorded source of it is given in the papers cited, on Electrobiolytic Theory of Dental Caries, which indicate not only the actual physical means by which mass is reduced in caries but also show the reverse process of tartar deposition to be due to the operation of the same physical forces.

If the process of electrobiolysis observed in dental caries could be reversed, by chemical or drug or other devices, Manning reasoned, it might be possible to stop dental caries or avert it. The electrochemistry of the mouth having been verified to the investigator's satisfaction, a search for a reagent which would combine readily with tooth structure was begun, and it was no great time until fluorine was found to be both readily combinable out of one of its compounds with tooth structure, either the enamel or the inner structures of the tooth, and also to afford that altered tooth substance a cathodal quality, from which, in both theory and practice, loss of mass, as in dental caries, was not only impracticable but did not occur.

But it was also found that sodium fluoride when applied to either the cementum (root covering) or dentin (inner portion of tooth) rapidly and thoroughly and permanently deprived the tooth of all sensory nerve response. This presented a grave hazard, and immediately a promising discovery was rendered so dangerous as to warrant its suppression. But when events are in the making such matters are given up reluctantly, if at all, and as a consequence Manning started with animal experimentation to determine, against a day when the serious nerve-poisoning properties of sodium fluoride might possibly be subdued or circumvented, those two conditions precedent to the commercial exploitation of any drug which lay upon the hand of the medical innovator the heaviest of obligations.

Those two conditions precedent to commercial exploitation of all drugs are:

1. The determination of a minimum lethal dose of the drug, with reference to units of body weight, to be ascertained over a wide range of experiments on warm-blooded animals of widest range of body weight, variety, and species, arranged in series.

Without such knowledge no drug should be introduced into commerce; the USPHS employees know it, you know it at least instinctively, and I know it and abide by it.

Such a value is indeterminable for any fluorine compound investigated, due to the capricous nature, or rather the viperish nature of the element, fluorine, itself. You do not know the minimum lethal dose of any fluorine compound as against unit body weights in humans, I do not know it although I have at great labor tried to find out and that now long ago but still reliable, and the employees of the United States Public Health Service do not know it although they made wild statements that "five grams has caused death." No doubt they are right, but that recklessly misleading statement might result in a large number of deaths and I am not at all sure that it has not done so.

2. The minimum lethal dose knowledge must be supplemented by knowledge of a reasonably safe and effective antidote, calculated likewise against body weight, having a minimum of undesirable side effects and no lasting bad effect or retention, and capable of ready administration.

Animal experiments show this condition precedent is a vain hope, the language of the standard reference book, Merck's Manual, concerning sodium-fluoride poisoning, when compared with the section on lead, for instance, or when taken by itself, is testimony as to what happens to sodium fluoride poisoning victims.

Seeing that the way to proper introduction of sodium fluoride into dental medicine for the purpose of cathodization of human tooth surfaces was barred, I turned away from the needless and pointless destruction of animals and devoted myself to maintenance of proper diet so far as lay within my powers of persuasion, for the benefit of my patients. I regret to say that my success in influencing any important number of people toward use of whole grains, sugars, and sirups which have been altered chemically to a minimum, and fruits and vegetables has been negligible, not at all like that of Dr. Fred Miller, of Altoona, Pa., whose success is a matter of record. Dr. Miller is more able than I am and more persuasive, and as a master dentist he is to be complimented for his statement to the Select Committee on Chemicals in Food, and there are other Dr. Millers in this country, but for my part I have influenced fewer people in correct food selection and dietary management than any one of a dozen well-known radio hucksters have in 15 minutes. I make this tremendously serious admission against selfish interest only because somewhere there must be a true record of our times, and because we are not getting that record in the dental journals today. In a Nation that almost universally cultivates a silly grin, displaying all teeth away back to the molars, whenever a camera comes in view, the fabulists and calamity howlers who create a din over the poorest teeth in the Nation, in a hundred cities simultaneously, are checked by the pictures themselves. We can get rid of dental caries by ruling out vitiated flours and sugars; I have proved it in my own case, and in a few others, and every dentist in this country worth his salt knows it and believes it thoroughly. The point is so obvious that I mention it here only to comply with the requirements of the presentation.

There are many other matters of importance which cannot be dealt with in this statement due to lack of time alone, but there is one which should be brought to the attention of every legislative body immediately. This is the matter of remedy. It is presumed that where one finds fault with the existing state of things, the faultfinder should propose a reasonable and legal and workable remedy.

There is not the slightest question that public health officials have gone too far in this matter of forced fluorine therapy. How much too far they have gone is a matter for our courts to decide. They have gone too far in other lines also, but it is not only the excesses which have been practiced but the entire setup of means and methods which requires now a thoroughgoing investigation.

It has been the experience of men—and children—that they are happiest when working under minimum restraints, such as the restraints of law which are certainly minimum, for these legal restrictions are the lowest form of restrictions, the mere infringement of which results in penalties, whereas the infringement of the higher restrictions, such as the nobler moral restrictions placed by every man of character upon his acts, both the unseen and the seen—and nobody is in a better position to observe this point than a practicing dentist—is not accompanied by any penalty at law.

Reasonable minimum standards placed upon the principal representatives of branches of science also tend to build and preserve that branch of science where they are observed, by curbing excesses of modes and manners.

Gross failures to observe common medical manners by doctors in Massachusetts, the invention of deceitful subterfuges such as the insincere political farethee-well called home rule publicly and—among the political initiate—a gim-

mick which I believe is gutter language for brass knuckles, led to the filing of a medical bill of rights for the 1954 session of the Massachusetts General Court. Just as we have uniform sales acts, uniform negotiable instruments acts, and a uniform bankruptcy act, so the commerce and travel of this Nation must in some way be safeguarded by a uniform medical bill of rights or some such device to shield the unwary traveler who must visit given areas on business from excessive medical enthusiasms of the adventurers who, having gleaned a few facts from their extension courses in the Pocket Digest School of Medicine, become obsessed with the delusion that every human being in sight can be lassoed for a set of unspeakable experiments with this or that nostrum of the moment.

The committee may find also that the appended text of the Massachusetts House bill No. 607, recently reported out unfavorably, but favored by the chairman of the Joint Committee on Public Health of the General Court, holds constructive interest in that it was drafted by a practicing dentist, along with H. 608, a bill patterned on the expertly drafted H. R. 2341 of the United States Congress, and the minority report of the Massachusetts Study Commission on Fluoridation of Public Water Supplies.

TEXT OF PROPOSED MEDICAL BILL OF RIGHTS, OR UNIFORM MEDICAL RESEARCH BILL

(NOTE.—This bill is patterned on a dictum in the decision of United States tribunal No. 1, dated August 19, 1947, at Nuremberg, the court composed of four United States judges acting under authority of control council law No. 10. Certain medical insolences have been removed from the area of conduct defined by the bill, such as the preposterous expression "before the acceptance of an affirmative decision by the experimental (human) subject * * *" but with the exception of placing moral qualifications upon medical experimenters the bill follows the so-called Ten Standards in the main.)

A Uniform Medical Bill of Rights, Proposed To Protect Travelers and Engaged in Commerce from Impressment Into Medical Research and Treatment Initiated, Conducted, or Engaged in by Local Enthusiasts of Totalitarian Medicine

SECTION 1. The voluntary consent of the human subject to undergo medical or surgical experimentation is absolutely essential. Such consent must be express, it cannot be implied, and must be based upon complete information to the proposed human subject by the experimenter, who shall explain beforehand to the proposed subject the right to withdraw from the experiment at any time. The proposed human subject shall have the legal capacity to give consent; shall be so situated as to be able to exercise free power of choice, without the intervention of any element of force, fraud, deceit, duress, overreaching, secrecy concerning any and all details known to the experimenting doctor or researchist, or other ulterior form of constraint or coercion; and shall have before the intiation of the experiment such sufficient knowledge and comprehension of the subject matter involved as shall enable him to make an understanding and enlightened decision whether to become a subject for the experiment.

This latter element requires that before the experimental human subject affirmatively engages in the experiment by his own decision there shall be made known to him the nature, duration, and purpose of the experiment, the method and means by which it is to be conducted, all inconveniences and hazards reasonably to be expected, and the effects upon his health or person which may possibly come from his participation in the experiment.

The duty and responsibility for ascertaining the quality of the consent rests upon each individual who initiates, directs, or engages in the experiment. It is a personal duty and responsibility which may not be delegated to another except under the highest degree of care.

SEC. 2. The experiment must promise a recognizable likelihood that it will result in good for humanity, unprocurable by other means or methods of study, and must not be random or unnecessary in nature.

SEC. 3. The experiment shall be so designed and based upon the knowable facts of medical art and science as to support a reasonable anticipation of resultant benefit to human beings.

SEC. 4. The experiment shall be so conducted as to avoid all unnecessary physical and mental suffering and injury.

SEC. 5. No experiment may be initiated or conducted at any stage of which there is reason to believe that death or disabling injury will possibly or probably occur, except (by enabling act of Congress).

SEC. 6. The degree of risk to the human experimental subject shall never exceed that determined by the humanitarian importance of the problem being studied.

SEC. 7. Proper preparations must be made and adequate facilities provided upon the highest standard of care to protect the human experimental subject against all foreseeable possibilities of injury, disability, or death.

SEC. 8. The experiment shall be conducted only by morally and scientifically qualified persons. The highest degree of care shall be maintained throughout the planning, progress, and postexperimental stages of the experiment, by those who initiate, conduct, or engage in the experiment.

SEC. 9. The human experimental medical subject shall be at liberty at all times during the course of the experiment to bring it to an end by signifying that he has reached the mental and physical state where continuation would seem to him to be impossible or to exceed his free choice and voluntary consent.

Expression of the wish to withdraw from the experiment shall require immediate cessation of experimental use of the subject. The experimenting doctor or researchist shall remain alert at all times to see and put into effect any implied wish of the experimental subject whenever his affirmative and voluntary consent becomes in the slightest degree uncertain, and must under all conditions act as the advocate of the human subject.

When the human subject withdraws from an experiment before its completion he shall be free from all contractual obligations to the contrary, and any contract to compel continuance or to indemnify the experimenting doctors or researchists for withdrawal shall be null and void.

SEC. 10. The initiators, conductors, and those who engage in the experiment shall be prepared to terminate the experiment at any stage, if they or any of them have probable cause to believe in the exercise of the good faith, superior skill, careful judgment, and moral responsibility required of them that a continuation of the experiment may possibly result in mental or physical injury to or disability or death of the human subject.

Claimants of right to carry out massive experimental fluorine therapy upon arbitrarily selected human subjects among American free men, having objected to the interposition of the principles of the 10 standards of the Nuernberg decision, by those free people, as a scurrilous sophistry, while at the same time claiming those standards as a principal defense of inmates confined in concentration camps in Nazi Germany (often as a posthumous defense, or rather a retaliation) and having found no resistance to publication of their comments in JADA, the Journal of the American Dental Association, will be compelled to compare the treatment dealt out to the subjects of fluorine experimentation with that written consent to perform an autopsy, or to carry out medical experiments on prisoners confined in jail, which experience has shown to be necessary.

If the protection granted by judges of the United States Government to political prisoners confined in Germany's concentration camps is greater than the protection which we as American free men can obtain against unexplained and unconsented experiments, such as those carried out with wildest abandon, in the random and unnecessary and wholly uncontrolled fluorine experimental research and treatment, from our law enforcement agencies, then we are forced to appeal to our next line of defense against oligarchic controls, the legislative branch of our Government.

Here we hope to obtain the necessary relief in fact we feel so certain that our legislators will find this their personal problem that we will forego any forecast of the course of further search for remedy, secure in the belief that the protection sought will be forthcoming promptly.

The CHAIRMAN. It will not be possible to include in the record all of these newspaper articles you have submitted to us, however.

I would suggest if you wish these you are free to take them or you may leave them as exhibits with the committee as you desire.

Dr. MANNING. Thank you, sir. We hope to be back. You will see us again, I am quite sure.

(The newspaper articles referred to have been placed in the committee files.)

STATEMENT OF MRS. HARMON SWIFT, ASSOCIATE EDITOR OF THE SOCIAL SPECTATOR, NEW YORK CITY

Mrs. SWIFT. The ex-mayor of Grand Rapids, who was in office at the time that fluorination was put in Grand Rapids, told me it was in about 1933 or 1934 that Grand Rapids was fluorinated.

When I spoke to him I said "But we do not have a record of that. It is supposed to be 1945."

He said, "Oh, no. It was put in in the thirties in Grand Rapids."

My interest was because my brother and his family live there and they have very bad health at the moment.

The CHAIRMAN. Off the record.

(Discussion held off the record.)

The CHAIRMAN. We will conclude with the proponents of this legislation. I see a gentleman in the rear who has arisen and desires to say something. I assume not withstanding all we have heard there is something new.

STATEMENT OF DR. C. T. BETTS, TOLEDO, OHIO—Resumed

Dr. BETTS. I get reports from all over the country, and I find men like my Senator Taft died after drinking this water 1 year.

I find Supreme Court Justice from Kentucky also buried after drinking the water 1 year.

Many of our Senators and Representatives have gone since this town has been fluorinated.

The CHAIRMAN. Dr. Betts, if you wish you can extend the remarks you made yesterday to include what you have just said if you prefer to elaborate on them.

Do we have someone else?

Mrs. LILLIAN VANDERMERE. I wanted to say that I would like to express my gratitude to you and your committee for having given us your excellent attention, to us the proponents of H. R. 2341.

The CHAIRMAN. At this point in the record will be inserted the statements of the proponents of H. R. 2341. I have the following material:

Letter from Dr. Arthur B. MacWhinnie, Seattle, Wash.
Statement of Mrs. Josephine McQueen, Loudon, Tenn.
Statement of Mr. H. L. Prestholdt, Minneapolis, Minn.
Letter from Mr. Charles C. Deubel, Jr., South Orange, N. J.
Statement of Dr. George L. Waldbott, Detroit, Mich.
Letter from Mr. Pierrepont E. Twitchell, president, Citizens Medical Reference Bureau, Inc.
Letter from Anna M. Ferguson, Washington, D. C.
Statement of Dr. George J. Brett, Lancaster, Pa.
Statement of Mr. Anthony J. Romeo, 12 Romeo Avenue, Massena, N. Y.
Letter from Dr. A. R. Gould, San Francisco, Calif.
Letter from Mrs. Robert H. Crane, Anchorage, Alaska.

(The statements referred to are as follows:)

SEATTLE, WASH., *May 22, 1954.*

ELTON J. LAYTON,
Clerk, Interstate and Foreign Commerce Committee,
House Office Building, Washington, D. C.

DEAR SIR: For financial reasons I cannot act on the notice sent me regarding committee hearings on H. R. 2341 to appear before the committee.

Were I to appear, my statement would be an elaboration and citing of many instances of restriction of open discussion of the question of fluoridation by members of the dental profession in a position to gag opposition, not only in Seattle, but elsewhere. It would point out that such tactics appear general in the profession, and the endorsements of the A. D. A., therefore, become meaningless.

That the great preponderance of dentists endorse fluoridation under these circumstances gives stature to those who, after thorough investigation of both sides of the question, now oppose official position.

The enclosed statement which appeared in Oral Hygiene is a condensed version of what my statement today would be.

I request that it be read into the record of these hearings.

Sincerely,

ARTHUR B. MACWHINNIE, D. M. D.

On this day of May 22, 1954, Arthur B. MacWhinnie personally appeared before me and executed the foregoing instrument, signing same as his free and voluntary act and deed.

[SEAL]

BLANCHE OPPERMAN,
Notary Public (for State of Washington).

[Reprinted from the January 1953 issue of Oral Hygiene]

NaF FLUORIDATION IS COMPULSORY MEDICATION

(By Arthur B. MacWhinnie, D. M. D.)

Step by step, a piece at a time, our Government planners with their vast resources of money, manpower, and time, are weaving a pattern to destroy all vestiges of self-sufficiency in the average American and deliver him as a slave to his Government; often this is done under the guise of "social progress."

We have all been aware of this for years, and have deplored the planned destruction of the very qualities that have made America great. With the exception of voting at the polls, there was nothing the average dentist could do about it, until the advent of fluoridation.

It may be coincidence, but about the time the American Medical Association (aided by the dental profession) took a magnificent stand against Oscar Ewing and his Federal Security Agency and their plan to set up compulsory health insurance, the United States Public Health Service (also led by Ewing) suddenly concluded that fluoridation experimentation had gone far enough and was ready to be forced on the public, largely without their knowledge or consent.

If they could not initiate the whole program, they would attempt partial compulsory mass medication, in principle and fact, by spreading their entire weight and resources over the Nation at one time.

ADMINISTERING FLUORIDES BY PRESCRIPTION ALLOWS INDIVIDUAL FREEDOM OF CHOICE IN ACCORDANCE WITH EACH PATIENT'S REQUIREMENTS

I, too, was swept off my feet at the first onslaught of fluoridation in my community. I spoke for its adoption at several large meetings. It was not long, however, before questions arose in my mind as they have in the minds of all thinking dentists.

I reversed my position when I suddenly realized how easy it is for man to become totalitarian in his thinking; when he thinks he knows what is right and good for everyone; and attempts to force his decisions on others without their consent. Try that in your dental practice and see what happens. Your patients make the final decision as to which of your services or suggestions they will accept, and they can reject all or part. That is the way democracy should operate.

I could not deny the possible benefit of fluoridation to children, despite its totalitarian aspect, without having an alternative to offer. If I could find an alternative, there was no reason whatever for my dictatorial thinking. On

discussing the problem with my pharmacist, I found to my delight that there was another way of administering fluorides, less costly and in a purer form than the Government's method, and one which would be voluntary.

I rushed to report my findings to the dental profession. I received a great shock, for, in what I had still considered a free America, the platform of the Seattle District Dental Society was denied me to speak against fluoridation, although the request was made two meetings in advance. We heard speakers for fluoridation at every regular meeting from December 1951 through March 1952.

I then decided to write my report for my State Journal. I have been a member of the publications committee for several years, writing editorials which the profession apparently liked. Again I was stunned. My editorial, presenting arguments on both sides of the question, was removed at press time by the committee for fluoridation. If the profession is not qualified to discuss this question, then who is?

I found, however, that a few wide-awake dentists had been prescribing fluorides for years and were violently opposed for many reasons to the principles of mass prescribing and compulsory mass medication. You, too, can prescribe them if you and your patients believe, as I do, fluorides will reduce dental caries. In my office, no charge is made for a prescription to my regular patients. It is part of our service.

Sodium fluoride "milk drops" are available. Four drops provide the daily dosage. The drops can be added to fruit juice, water, milk, or the baby's formula; or they may be put on his cereal. The cost of this chemically pure drug is about 1 cent a day.

Quick dissolving tablets containing 1 milligram of sodium fluoride (C. P.) also are available. Add one to a glass of any liquid the child drinks and he has received his daily dose. A tablet may be added to each quart of milk or fruit juice, and the quart bottle of water you keep in the ice box; then whatever the child may drink during the day, he is receiving the governmental concentration—but who knows what total dosage?

For economy, large capsules are available. Each capsule is designed to treat one 26-ounce box of salt, iodized or plain. A dozen of these capsules cost $1, and it is probable that a dozen boxes of salt will last a family 3 years or more, and the entire family receives an adequate dosage.

Vitamin C and D tablets are available which contain fluoride in the proper dosage. These are somewhat more expensive.

All of these methods have been used successfully for some time, but they have not received proper publicity. With a fraction of the space that is devoted in our journals to plumping for Government medication, these methods of fluoride medication could be publicized in a short time. Why hasn't this been done?

Now that this information has been published, which has long been denied you by our official journals, there is no longer any reason for dentists to support the case for Government medicine.

With several choices to suit the needs of different families, it is difficult to see why anyone should feel the necessity of impregnating the entire water supply of a city except for two reasons:

1. Compulsion, which is a dangerous step.
2. Additional power and control for Government bureaus.

Of course, I realize that some patients will not follow this treatment even if it is prescribed—the public health dentists have found this to be the case. Is that a valid reason for resorting to compulsion?

Freedom of choice

No voluntary method is as efficient as compulsion. But I still prefer the principle of freedom of choice, especially when my refusal to consume a drug neither harms anyone nor prevents others from having it.

The Public Health Service claims to be concerned with the health of all the people of this country. What steps are they taking to provide fluorides for over one-third of our entire population who do not drink city water? If they succeed in the fluoridation of sufficient public water systems, they actually will prevent the use of any other method that will benefit all the people.

The salt companies[1] soon will be in a position to use European patents for treating salt with fluorides—if there is enough of a market left to make it worth

[1] When this product is marketed, there will be no need for fluoridation of water supplies, nor prescribing. All Americans, rural as well as urban, can have fluorides in proper dosage without increasing Government payrolls 1 cent.

their while. Then, under the guidance of the dentist or physician, the patient may choose or reject the fluoridized salt sold at his grocer's.

You may recall the attempt a few years ago to add iodine to the water supplies. Other ways were found to provide children with this drug and before long it was learned that iodine aggravated certain types of goiter.

The question is: Shall we turn over our children's dental care to the Government or will the profession continue to control it? Given this power, the Government bureaus will continue to reach for more.

I will yield my right to prescribe and control fluoride medication for my patients to private enterprise, rather than to a Government bureau. This is one Government control that we, as dentists, can aid in eliminating.

I prefer the middle of the road. Let us prescribe fluorides for children with their parents' consent, only when they may be beneficial.

After extensive testimony from a host of leading scientists, the Delaney congressional committee investigating fluorides says, "Go slow." Long-term effects of fluorides only now are being investigated.

Dentists, physicians, lawyers, and businessmen led the fight that defeated fluoridation in Seattle. They are prepared to help others.

Do you have the will to resist?

1025 Medical-Dental Building, Seattle 1, Wash.

STATEMENT OF MRS. JOSEPHINE (TOM) MCQUEEN, LOUDON, TENN.

Mr. Chairman, for many years I have been deeply concerned over the widespread and growing use of fluorides in water systems.

While I myself, do not have a professional background in this line, I have talked with many of the leading authorities concerning the harmful effects of fluoridation. I am distressed that more emphasis has not been placed upon the evidence of those who oppose fluoridation and I respectfully ask that they consider the data which I have gathered.

I present first a leaflet with statement by Dr. Clive M. McCay of Cornell University.

FLUORIDES POISON TO ALL LIVING TISSUE

We have long studied fluoride in the body and do realize that it accumulates in bone. We believe, as a whole, that the putting of fluoride in water is being pushed too rapidly. The original plan was to study the matter for 10 years and only a little more than half this period has passed.

As a whole, the medical profession knows very little about the matter, so they are approving it.

The dental profession in most areas can say nothing because they will be accused of selfish motives if they show any signs of opposition.

Therefore, most of them agree.

However, there is a group of dentists in New York City who do believe that the data are not sound.

CLIVE M. MCCAY, Ph. D.,
Agricultural Experiment Station, Cornell University, Ithaca, N. Y.

At your drugstore look in the big book entitled:

"The Dispensatory of the United States of America—24th edition" page 1456.

"Fluorides are violent poison to all living tissue because of their precipitation of calcium. They cause fall of blood pressure, respiratory failure and general paralysis. Continuous ingestion of nonfatal doses according to Sollman (J. Pharmacol., 1921, 17, 197) cause general cachexia and permanent **inhibition of growth.**

"Analogous changes in teeth.

"Bones become hard and fragile.

"The use of fluoride-containing dentifrices and internal medicants is not justified."

United States Department of Agriculture. Yearbook 1939—

"Food and Life" pages 212 and 213.

"It is especially important that fluorine be avoided from birth to the age of 12 years."

I had been told by the proponents of fluoridation that the statements made by Dr. McCay were obsolete and would not now fit the present situation. In reply to these arguments I would like to offer a letter from Dr. McCay dated April 28, 1954, in which he refutes any statement that his leaflet is now obsolete.

NEW YORK STATE COLLEGE OF AGRICULTURE,
CORNELL UNIVERSITY AGRICULTURAL EXPERIMENT STATION,
DEPARTMENT OF ANIMAL HUSBANDRY,
Ithaca, N. Y., April 28, 1954.

Mrs. JOSEPHINE MCQUEEN,
McQueen Farms, London, Tenn.

DEAR MRS. MCQUEEN: Thanks for your letter of recent date.

I cannot see how your information concerning fluoridation of water can be out of date. I believe the following facts still stand. In the first place, I know of no physician in any health department who has ever done any work with fluorides. In the next place, I know that among dentists there is substantial division in the regard to the use of fluorine in water, although dentists will not express themselves in public because they fear bad public relations if they vote against fluoridation. Finally, I know of no foreign country that is making use of fluorides in water, although I am certain that teeth in countries such as England, Switzerland, and Sweden are bad or worse than those in America. I also know that while I was living in Switzerland, there was a scientific commission considering the problem and this commission had been in existence for some time. If this panacea is a hundred percent satisfactory, why have these scientific commissions that are under far less political pressure than they are in the United States refused thus far to put fluorides into any of the water of these foreign nations? I understand that when the representatives from England came to visit this country, they were piloted around in much the Russian fashion showing them only the people in favor of fluoriding water.

I cannot see how any of these facts have grown out of date if you have them. I, myself, believe that all of us wish to do the best possible for the children, but that we do not wish to dive into this matter in a huge nation when smaller nations with scientists who are equally as good are refusing to go in.

Yours sincerely,

CLIVE M. MCCAY,
Professor of Nutrition.

Then, I also respectfully ask that the committee give consideration to the statement made by Thomas H. Allen, president of the Memphis Light, Gas, & Water Division of the city of Memphis.

Mr. Allen has had much technical assistance and advice in the preparation of this statement, and this, coupled with his many years of experience in the water division, makes him extremely well qualified. This is a revised copy and was submitted to me by Mr. Allen with his letter of April 19, 1954.

MEMPHIS LIGHT, GAS & WATER DIVISION, CITY OF MEMPHIS,
Memphis, Tenn., April 19, 1954.

Mrs. TOM MCQUEEN,
London, Tenn.

DEAR MRS. MCQUEEN: Enclosed is a revised copy of Fluoridation of the Memphis Water Supply. My reasons for making revisions are as follows:

Page 2, the paragraph relative to iodine tells the story correctly, but it was put into practice in such a small area that it could be misunderstood. In fact, it has been misunderstood. It was found that salt containing iodine could be used without running the risk of giving iodine to people who did not need it, and the result was that this whole program was dropped by the public health service.

The statement in my original paper is correct, but the whole program did not get very far before the change in policy was announced.

Referring to ninth paragraph on page 6, we found that it would be better to make a broader statement relative to the differences in the different types of fluorides, and a new paragraph has been substituted for the original one.

As revised, this paper may be used.

I will appreciate your returning the first copy to me.

Very truly yours,

THOS. H. ALLEN, *President.*

FLUORIDATION OF THE MEMPHIS WATER SUPPLY

THE PUBLIC GOOD

The Board of Light, Gas & Water Commission is ready to do everything that contributes to the public welfare. When convinced that fluoridation of the Memphis water supply will contribute to the welfare of all the people, I can promise that no time will be lost in putting in the equipment necessary to do the job regardless of the energy required or of the cost.

However, it is an obligation of the board to supply a safe, sanitary water for public consumption. Pure water is an essential. It is the most important of the three services rendered by the division.

Until the evidence is completely convincing, I am sure that this board will not add fluoride to the water supply.

I have been accused of being bullheaded about this. I am and will continue to be until I am sure that any change made in the water supply is, in fact, for the benefit of all the people. This is my duty. Surely nobody would want those in charge of the water supply to be otherwise. I, therefore, plead that we approach this problem with recognition that we should be hard to satisfy and that no amount of pressure should make us yield in this matter; and likewise if convinced that fluoridation is for the best and that no amount of pressure should deter us from adding fluoride to the water.

First: Controlled studies, under scientific supervision, are under way in only a few cities. These experiments have not been underway for a sufficient length of time to establish any conclusive facts as to either the benefits or ill effects of fluoridation on the complicated human system.

Years ago when I was a young man, the dentists solved many problems—temporarily—by killing the nerves of the tooth. It took time to develop the disastrous effect of that mistake. Of more recent date, I recall so many teeth that were condemned because they were dead. These are all recollections and nothing more. I am sure you get the point.

Second: How much fluoride? The University of New Mexico, where large areas are blessed or cursed with too much or too little fluorine, has made studies relative to fluorine poisoning and mottling of the teeth in various degrees. The destructive effect of too much fluorine upon human teeth can be horrible to the person so affected.

It has been brought to the attention of the public that a water supply having 0.5 part per million of fluorine produced mild fluorosis in 9 percent of the children 12 to 14 years old, and that a supply of 0.7 part per million produced fluorosis in the same age bracket of 12.6 percent.

It is proposed to add 1 part per million to 1½ parts per million to the Memphis water.

These recommendations and discussions do not take into account the different chemical characteristics of the different water supplies. Perhaps it makes no difference. But Ohio River water at Cincinnati and Louisville, water from the Great Lakes, Mississippi River water, and Memphis well water are not the same. Climate and geography may have a bearing. These questions have been raised; they have not been answered.

The amount of dosage of any medicine for one child would not necessarily be correct for another child. Surely the correct dose for a 2-year-old would not necessarily be correct for a 12-year-old.

And no matter what the dose, what effect will 1 percent of fluoride have on old people, on sick people, on bones, on lungs, or joints?

Third: By what authority does an individual or group have to administer medicine to another person for treatment of an uncommunicable disease? Do any of you contend that we have a right to prescribe medicine for you and your children whether or not you want to take the medicine? Very few individuals stop me on the street or elsewhere to urge fluoridation. Many stop me to protest the use of fluoride. Do we have a right to administer a medicine to those people in the absence of the threat of an epidemic—medicine they do not want to take?

Admittedly, fluorine is a rank poison, and, admittedly, just the proper amount should be added. This amount is usually referred to as 1 part per million. It has been suggested by a State public health official that should Memphis add fluorine this dosage should be reduced to 0.8 part per million. What this means is, that if you put 1 ounce of fluorine in 7,500 gallons of water it will be too much. This should be reduced to 0.8 of an ounce to be proper. In other words,

there is a difference of 20 percent between what is good and what is bad. Is it not common knowledge that the water intake by individuals and the ability of individuals to assimilate elements varies much more than this 20 percent, and, therefore, is it not clear that there is no way to add any of the presently available fluorine compounds to a public water supply except that the amount added may be proper for some, but will definitely be improper for many? This should indicate that a dosage of fluorine as now constituted suited to a particular bracket and administered to all elements of society certainly appears to be an inaccurate, unscientific, and unprofessional approach to a health problem.

It is so important to limit the amount, yet it never seems to occur to the dentists that one person will drink more water than another, and more in hot weather than in cold. So many questions go unanswered that I become fearful that the whole program is carelessly conceived.

Fourth: Should we use fluorides on our lawns, in steam plants, electric batteries, bakeries, and all the other commercial and industrial plants whether they like it or not? Perhaps it will do them no harm. Should this not be predetermined by exhaustive tests?

Fifth: The Public Health Service states: "National organizations of professional health workers, impressed by the findings of decades of research on fluoride and dental decay, have endorsed the adding of fluoride to community water supplies. They include: American Dental Association, State and Territorial Dental Health Directors, American Association of Public Health Dentists, Public Health Service—Federal Security Agency, State and Territorial Health Officers, American Public Health Association, and American Water Works Association."

This statement is not so. The correct statement can be found in the Journal of the American Water Works Association, volume 41, page 575, which reads as follows:

"THE FLUORIDATION OF PUBLIC WATER SUPPLIES

"STATEMENT OF RECOMMENDED POLICY AND PROCEDURE

"In communities where a strong public demand has developed and the procedure has the full approval of the local medical and dental societies, the local and State health authorities, and others responsible for the communal health, water departments, or companies may properly participate in a program of fluoridation of public water supplies."

This is not an endorsement.

Waterworks men are mostly engineers and chemists dealing with the ordinary problems of water supply and water treatment. They are not equipped by training to deal with a medical problem such as fluoridation.

This statement clearly states that if those responsible for the health of the community will take the responsibility for fluoridation, that the water departments may participate by actually adding the fluoridation, that the water departments may participate by actually adding the fluoride to the water. And, in the recommended procedure, the water utility should be relieved of all liability.

Sixth: But I see no way for the water department to escape liability. Apparatus may go wrong, men may make mistakes, and overdosage may result.

If your children or grandchildren (I am concerned about the grandchildren) turn up with mottled teeth, who pays the damages? Will the Council of Civic Clubs write the guaranty to hold the division harmless and back it with liability insurance of sufficient amount to cover the possible claims from 400,000 people?

Seventh: The dental society has instigated numerous statements on fluorine but has failed to tell the public what a local dentist told a group in Memphis, which was that, in general, dentists do not like to serve children and that by putting in the same time on adults, they can gather in more money. Since certainly most dentists have received their education and training largely at public expense, they should feel obligated to serve all elements of the public, including children.

Eighth: Statements have been made to the public that by adding fluorine, an improvement of 65 percent results. This is a figure obtained by projecting a curve into years ahead and is not the record of what has actually been accomplished. Since this is the case, one would be interested in how the figure of 45-percent improvement resulting from topical applications was arrived at. Since all the emphasis on fluorine has been in one direction only, it could be that the 65-percent figure is too high, and the 45-percent figure is too low.

However, assuming the figure of 45-percent improvement, resulting from topical applications, to be correct as claimed by the dentists, is it not commonsense to send the child to the dentist every 2 years and have fluorine applied? This visit should be made regardless of fluorine, and while there the simple application can be made, thus bestowing its benefits to the one who needs it, without involving the many thousands who cannot profit by its use and do not choose to be forced to swallow it. In any event, this procedure for better or for worse limits the hazard to those who wish to take the chance.

Ninth: As I understand it, fluorine is present in many foods and is essential to the human body. Sodium fluoride, the substance proposed to be used in our water, is a deadly poison, and is entirely different from the various complex fluorine-bearing compounds, organic and inorganic, occurring in nature.

Tenth: When I first heard of the proposal to fluoridate public water supplies as a cure for decay of teeth, my immediate reaction was "wonderful." It seemed so easy to do.

When I learned that too much fluorine might discolor, mottle, or destroy the teeth, requiring accurate control of the amounts introduced into the water supply, I decided that the program could be a first-grade nuisance to the water division.

Every time a mother found a cavity in a youngster's tooth we would be at fault for not providing enough fluoride; and whenever some youngster developed discolored or mottled teeth, the wrath of an outraged family would be unsparingly poured upon our heads. As a nuisance possibility it made me shudder, and I began to be afraid of it, because if it could be a nuisance, it could be dangerous.

Sabotage is an ugly word. The enemies of America have not overlooked the possibility of using the water supplies of the country to sabotage the health of the people. It is an item that has given us some concern in preparing the civil-defense measures necessary in case of war.

If we fluoridate our water, we will equip all of our plants to inject a deadly poison into our water. Has it occurred to any of you here that saboteurs, just one in each plant, by turning a valve, could inject a tasteless poison into our water in deadly quantities?

CONCLUSION

Speaking for myself only as an officer of the water division, I am not convinced that fluoridation is desirable, or even safe.

It should be understood that I have not reached any final conclusion about the matter other than a definite decision that we should not risk spoiling the best water supply in the Nation unless there is definite and conclusive proof that the addition of fluorine to Memphis water will be of benefit to all the people, worth what it will cost, and that the use of fluoride is safe for all the people—young children, old people, well and sick people. Since the responsibility falls on the city government and the division, I feel, in the absence of convincing proof, that the answer should be "No."

In conclusion, Mr. Chairman, I feel sure that the committee will give equal weight to both sides of this important issue since undoubtedly it will directly affect all of us and all of our families.

I feel that in view of the serious consequences of fluoridation the committee should exhaust every possible means of investigating this proposal before taking favorable action.

STATEMENT OF VIEWS ON PROPOSAL TO MAKE IT UNLAWFUL TO ADD ANY FLUORIDE COMPOUND TO PUBLIC DRINKING WATER, BY H. L. PRESTHOLDT

This statement refers to H. R. 2341, introduced by the Honorable Roy Wier, intended to make it unlawful to dissolve any fluoride compound in waters intended for human consumption.

For the purpose of this statement, whenever fluorine, fluoride, sodium fluoride, or the fluosilicate, or when any of these terms are used it means, and the reference is to a fluoride compound irrespective of its nature, composition, or physical property.

The element fluorine is a member of the halogen group. It is extremely poisonous, dangerous to handle, and found in nature usually in combination with calcium.

Several years ago, it was brought to the attention of several scientists that wherever the soil or water contained quantities of fluorine, that invariably in

such areas, a number of people suffered from fluorosis. Considerable work was undertaken at that time to discover some practical means by which the fluorine or fluoride could be removed.

Sodium fluoride is the salt of an alkali and hydrofluoric acid. This acid is the result of a combination between the fluorine gas and the element hydrogen. When the element sodium is added it will combine with the acid to form sodium fluoride and by adding silicon, it will then form the sodium fluosilicate. Both of these salts are extremely poisonous and are frequently compared with arsenic, but they are considered more dangerous because of the great affinity of fluorine for calcium.

Salts or compounds containing fluorine are not recognized as having any therapeutic or medicinal value. A thorough search of medical literature does not establish or reveal any pathological condition where a fluoride compound is recommended either for internal or external use.

Physiologically, the sodium fluoride or the fluosilicate appear on the market in a white, heavy, dust-fine power. It is being offered in two distinct grades, the commercial and the chemically pure. The commercial grade contains from 90 to 95 percent of sodium fluoride, the balance being inert or impure ingredients difficult to dispose of or remove. It is tasteless and odorless and completely soluble in water; and, because of these characteristics, it has been used extensively as a rat poison or pest exterminator.

The principal source of the fluorides are the piles of slag containing the element fluorine and is the result of the use of cryolite in the extraction of the metal aluminum.

Sodium fluoride or the fluosilicate does not appear in nature as such. They are manufactured and usually from the leftovers at the aluminum plant. The piles of these byproducts are difficult to dispose of as it is largely waste and because of the danger associated with any materials containing fluorine, it has been a manufacturing problem for many years.

There has been a great struggle going on for considerable time to dispose of this waste. It is not permitted to be dissolved in rivers or streams. It is against the law to dispose of this material in the river or sea. The reason why is due to the inherent risks with possible effects on wildlife and farm stock.

Great effort has been made to find an outlet for the fluorides. It is used quite extensively in art and industry especially in manufacturing adhesives and paints, but there is not sufficient industrial use to consume the constantly increasing quantity of waste containing fluorine, largely due to the enormous expansion and development of the metal aluminum industry.

For almost a generation, it has been recognized that in the fluoride sections of our country—notably the States of New Mexico, Arizona, Colorado, and certain counties in the State of Texas—there is a percentage of fluorine in the water and the soil. It is in these localities where endemic fluorosis is prevalent both in humans and the animal kingdom. This discovery has led to many different opinions, but scientists have definitely brought out the fact that when young children in the age group from 8 to 10 years ingest fluorine or its compound that the incidence of dental caries are somewhat reduced as compared with similar conditions existing in localities or other States where the fluorine content of soil and water is practically nil.

It is not generally understood how nature dissolves the fluorides because calcium fluoride is insoluble. Somehow, nature has converted the calcium fluoride into a soluble substance where it is even possible for plantlife to absorb it and vegetables grown in soil tinctured with fluorides are found to be rich in fluorine.

Despite this situation, there is great opposition to the natural fluoride compound in these States because it leaves the teeth in a mottled, jagged, and brittle condition. It is an established fact that dental fluorosis is found in these communities with drinking water that contains 1 part per million and when the permanent teeth of children so raised they tend to erupt more or less chalky while in color and later tend to become pitted and stained yellow, brown, or almost black.

Scientists upon careful investigation admit that the teeth are less prone to decay at an early age, but subsequent to childhood these facts are reversed. The fluoride content is then proven to be a masking operation. The teeth become infinitely more susceptible to decay and are so brittle it is difficult for any dentist to accomplish needed repair.

Cognizance has been taken of these facts in the communities where the fluorides are naturally in the soil and water. It is frequently referred to as "natural

fluoride," which is fully justified because calcium fluoride is in itself insoluble; and, secondly, because the method under which nature effects a solution is unknown to scientists.

We shall not speculate just how nature effects either the solution or the extraction. The simple fact we must keep in mind is that the fluorides manufactured artificially are totally different in their toxic activities. They are infinitely more poisonous and destructive to life than the fluorides referred to as "natural."

With this as an established fact, the great opposition to what is represented as fluoridation is the thought of permitting authorities to substitute the commercial grade of raw fluorides and dissolve this in the public drinking water in lieu of the "natural" or "conditioned" fluorides. The purpose of this bill is to prevent and make it illegal or unlawful for anyone to dissolve any compound containing fluorine in the drinking water; and it is on this account that I request that this committee approve the resolution in question and recommend to Congress its passage.

Doctors of medicine authorized to practice are familiar with the therapeutic effects of drugs and medicines as well as toxicology and dosage. In a period of many years of practicing pharmacy, I have not come across any record or found any evidence showing that doctors prescribe or make use of any fluoride compound as an internal medicine. The literature is quite extensive concerning fluorides but is practically silent when it comes to describe its therapeutic value for human ingestion—the safe does that can be taken internally without serious or harmful result. But every medical man knows that to obtain the greatest result from any drug or medicine it is important to remember, especially in connection with fluorines, that more fluorides will be retained if it is given in small multiple doses than when a similar quantity is given in a small number of larger doses. A great deal has been written about the quantity of fluorides proposed to be used and that the individual dose is exceedingly small and on account of that no deleterious effect is found. It is proposed to limit the quantity to 1.2 parts per million, which is considered infinitestimal, but it is well for this committee to remember that the highest authorities in the land agree that one part per million is the cause of endemic fluorosis with a marked tendency to mottling of the teeth. It is because fluorides like the iodides, the mercurial preparations, and the salts of heavy metals possess the arbitrary quality of accumulating in the system, and in the case of the fluorides, they will combine with the calcium in the bones and teeth and finally flow over into the soft tissues with injurious consequences.

The introduction of this legislation is intended to meet the challenge of the Department of Health, Welfare, and Education, which will be referred to hereinafter as the Federal Board of Health, as this is the bureau that is responsible for the introduction on a national scale any fluoride compound to be dissolved in public drinking water and commonly referred to as "fluoridation." It is a proposal introduced simultaneously with the former administration's attempt to introduce to America a policy which has become recognized as "socialized medicine." In the beginning, it was not the intention, however, to introduce the fluorides in the public drinking water or make it compulsory that every individual be obliged to consume the drug. The first original attempt to use the raw fluorides was described in one of the public documents, GPO–O–813330. This was a method of using a fluoride therapy not by feeding it to the child as a sodium fluoride solution but was recommended for topical application, and the literature stated that "for the first time in history a practical method for the prevention of teeth decay that can be applied on a group basis has been introduced. Tests so far have shown that out of every 10 teeth that might otherwise decay, 4 may be saved by a new preventive method." Apparently, it had not yet been called to the attention of the Public Health Board that the quantity of sodium fluoride used in tropical application would be very insignificant indeed and would under no circumstances solve the problem confronting the concerns burdened with very large waste piles of cryolite residues saturated more or less with fluorine. Sometime subsequent to the recommendation of the topical use of fluorides, there was a change in the minds of the members of the Federal Health Board. Although they had hailed the topical application as the greatest discovery in history, they quickly united, as the minutes of their meetings indicate, on selling the American public on dissolving the fluorides in the drinking water and that every person irrespective of age or physical condition ingest the fluorides, although they freely admitted that no possible benefit could be derived by anyone except those in the age group of from 1 to 10 years.

You will understand from this statement that the proposal of fluoridation is not in itself a health measure or a health program as represented. It is pure politics; and, as such, it has met with considerable success as, according to their own figures, they now have practically a thousand communities aggregating some 10 million people daily drinking fluoride solution and consuming foods that have been cooked in it. It would take too long to recite the dishonesty and chicancery employed to promote fluoridation, the falsehoods, half-truths, distortions and evasions, the rigged endorsements and carefully engineered public demand. There is evidence to show that the proponents of fluoridation have tried desperately to secure public approval and to put the proposition across on a grand scale before the people realize the inherent dangers in the whole evil undertaking.

The first step was apparently to set up a plan which would conceal the true facts from the public and lend it a veneer of respectability by instituting several proving grounds or test areas whereby after 10 years they could prove conclusively that fluorides in the drinking water were beneficial and reduced the incidence of caries in the young age group. But even with this small attempt there arose considerable public opposition. Consequently, the Federal Health Bureau, instead of waiting for the results of the 10 years' experiments and trials, began to forcibly introduce fluoridation on a national scale. For this purpose, they made the various State boards of health and dental associations not only their ready tool to carry out their sinister purpose, but the boards of health and dental associations became their captives and have been working hand in glove with the Federal Health Bureau in their effort to fluoridate the American public. There are, of course, a great many individual dentists, prominent men, who are opposed to this form of mass medication. Many of them have dared to voice their opinion and hostility to the whole program. They have helped greatly to arouse the public against the whole plan.

It has not been brought to our attention that any of our State board of health or the Federal Bureau has ever made a definite statement that by ingesting daily a fluoride that anybody past the age of 12 or 15 years could or would receive any or the slightest benefit from this medication. When you take into consideration that only 5 percent of the Nation's public water supply is used in the kitchen for cooking or for drinking, and as only the children between the ages of 1 to 10 admittedly are the only group that could receive any benefit, it means that only half of 1 percent of the total fluoride used can be used effectively. In other words, out of every $100 of tax money 50 cents will be used for the proponents' good purpose—the balance, $99.50 will be wasted and go down the drain.

Although this may seem like a terrific waste of public funds, the American people would be willing and could well afford to do it providing they were assured of definite benefits for their children or for themselves. Unfortunately, that is not the case; but, instead, we have embarked upon a program that violates man's greatest experience, viz to keep the public water supply pure, wholesome, and potable. Fluoridation is mass medication on a grand scale ostensibly to accomplish a reduction of the incidence of caries of the very young, but it is mass medication and provided it is found to be legal or not made illegal, we may then have opened the way to use the various public water supplies throughout the country for further experiments in medication in such well known human ailments as rheumatism, high blood pressure, diabetes and anemia.

In order to save space, or rather for lack of space, the customary method of inserting the origin, the documentary evidence or reference after each statement or paragraph, I have reluctantly dispensed with, but will supply upon request to proper parties the origin and full authentic information concerning every statement made.

The following facts appearing below are taken from:

Investigations and research by physiologists and biochemists, professors of medical colleges, M. I. T., engineers.

The hearing before Hon. Dr. Miller and other Members of Congress.

Opinions and court decisions and testimony by experts and scientists at trials in the courts of law.

Reference books, medical literature, documents, scientific papers, medical dictionaries, encyclopedias, pamphlets, booklets, scientific articles, United States dispensatory.

Books on chemistry, pharmacological therapeutics by Drs. Goodman and Gilman.

Papers from Professor Taylor of the University of Texas, Dr. Cristinai, Drs. Smith of Tucson, viz., Charles Eliot Perkins, Washington, D .C., biochemist, Dr. Charles A. Brusch of the Cambridge Medical Center, Dr. V. O. Hurme of the Forsythe Infirmary, Dr. Leo Spira of New York.

"Sodium fluoride is a general protoplasmic poison."

"Hydrofluoric acid produces a vesication and deep, progressive destruction of tissue."

"Dangerous symptoms have been reported in man from 0.25 gms. of sodium fluoride."

"Fluoride poisoning tends to lower the calcium of the plasma."

"Fluorides are strongly inhibitory to some enzymes."

"The addition of 0.4 percent of sodium fluoride renders shed blood non-coagulable."

"Sodium fluoride depresses the respiration of finely divided muscles."

"Lipase is inhibited by N. A. F. 1 : 5000."

"It is toxic to nerves."

"Endemic fluorosis is a serious problem in Argentina."

"It has not yet been demonstrated that the addition of raw fluorides to the water supply has the same effect on children living continuously for the first 12 years of life in fluoride areas."

"If caries do start in mottled teeth it spreads rapidly."

"The changes in human teeth consists of chalky white patches often pitted and eroded."

"Bone changes are seen especially with industrial exposure to the dust of cryolite or phosphate rock."

"Nonfatal doses when ingested continously cause general cachexia and inhibition of growth."

"In lower animals, analogous changes occur in teeth and the bones become hard, fragile, or brittle."

"Marconi reported severe acute parenchymatous nephritis or chronc poisoning of guinea pigs with fairly large doses of fluoride."

"Fluorine is not and cannot be effectively used for the purpose of sterilizing the water."

"It remains in the water and a rise in temperature accelerating evaporation leaves the fluorine unaffected and increases the concentration."

"Fluoridation will not cure dental caries nor prevent it entirely even in the young-age group which it is designed particularly to serve."

"We cannot escape the conclusion that fluoridation is a form of medication."

"Damaging to the brain and nerve cells."

"Harmful to the reproductive organs with the resultant lowering of the birth rate."

"Affects the thyroid gland and damages the liver."

"Creates a high incidence of bone fractures."

"Some of the highest life expectancies are reported from the regions of the globe with the least fluorine in the soil or water."

"There is no disagreement about the fact that fluorine is a protoplasmic poison."

"Since nerve function is not completely independent of the influence of calcium exchange, and since the intake of fluorine, in turn, has some influence upon the utilization of calcium, it would seem that there is a good theoretical basis for instituting upon some study of the role of fluorides from the neurologists' viewpoint."

"Fluorides are violent poisons to all living tissue because of their precipitation of calcium."

"They cause fall of blood pressure, respiratory failure, and general paralysis."

"Since all living processes occur in matter in the colloidal state, many pathological conditions, even probably insanity, results directly from disturbance of the colloidal state."

"It is an established fact that the fluorides cause breaking down of protein and disturb the colloidal state."

"To me it is unthinkable that the Public Health Service should recommend universal medication of water for everyone."

"I have repeatedly produced clear and conclusive evidence that proves fluorine can and does play an important part in promoting the first stage of cancer and in accelerating the second stage."

"The results show no change in the incidence of cancer, but rather indicates a shorter life span in the mice receiving the fluoridated water."

"The effect of fluorine on the human body is very little known."

"The scientific knowledge is very limited."

"The main thing to remember about fluorides is that they are protoplasmic poison, and they have never been medically approved."

"Extensive pharmaco-dynamic research from reliable sources leaves us speechless when we think of a plan to fluoridate the water of the entire Nation."

"It can only be classified as mass murder."

"These are some of the important conclusions: Sodium fluoride in small repeated doses may affect digestion by interference with enzyme action."

"May affect heart muscles by alteration of the heart solutions, calcium change."

"May affect urinary tract and eventually cause uremia."

"May give rise to aplastic anemias, causes incoagulability of the blood, attracts calcium."

"May cause serious bone change, precipitation of calcium."

"May induce many serious and varied nervous manifestations."

"Cause psychic and motor disturbances."

"All individuals may be allergic to some * * * that allergy is a biological alteration of the cell protoplasm. Fluorides are classified as protoplasmic poisons."

"Fluorine affects all parts of the body causing hardening of the tissues, osteomalacia of the bones, otosclerosis of the ears, sclerosis of the arteries."

"The toxic affect of fluorine increases as the temperature rises, a fact that is noted in the pamphlet of the American Dental Association."

"Since fluorine plays no useful part in human metabolism, it is false to claim, as some advocates do, that failure to put fluorine into the drinking water deprives children of something they need."

"Artificial fluoridated water tends to aggravate condition in people afflicted with goiter."

"It is the conclusion of reputable physiologists that the total effects of fluorine upon the human system is harmful."

"Mass medication of the whole population by means of fluoridation does not take into account the fact that every human being differs from every other, and what may not seriously harm one may kill another."

"High humidity increases the toxic effect of fluorine."

"The commercial inorganic sodium fluoride or fluosilicate contains minute quantities of many other ingredients."

"It is safe to say that fluoridation is mass medication without parallel in the history of medicine."

It would be possible under the circumstances to continue listing objections of vital importance against the use of fluorides in any quantity whatsoever. I want to repeat that fluoridation is definitely not a health program; it is political in every sense of the word. The Public Health Bureau has prostituted its high office and has embarked on a program which, if carried to its ultimate, might endanger the health and welfare of the whole Nation.

Placing of vast quantites of a deadly poison adjacent to or in close proximately to the public water supply is in itself filled with the greatest risk; and, it is the opinion of a vast number of people in America that such quantity of poison, with its great potentiality for damage and permanent harm, should be forbidden by Federal law.

I respectfully submit the above for your consideration.

LAW OFFICES, CHARLES C. DEUBEL, JR.,
Newark, N. J., May 15, 1954.

Hon. CHARLES A. WOLVERTON,
House Office Building, Washington, D. C.

DEAR SIR: I am greatly concerned over the fluoridation of our drinking water. I have opposed it locally (I am a village trustee at South Orange, N. J.) and will oppose it statewide and nationwide because I am fearful of it from a national security point of view.

I have studied this fluoridation for the purpose of making a decision on it for my community, and I can't understand the great pressure for its advocacy by governmental agencies and dental societies. I am suspicious of this pressure.

If it were such a good thing then pressure would not be needed. Why, why therefore, are the proponents trying to force it upon an unwilling and in most cases, an unknowing public?

First of all, if I or any other citizen believes that fluoridation is good for his children's teeth, we can go to any dentist and have it applied or a treatment rendered. Why, if I can do this, do we have to force it on all of the public?

Secondly, fluoride is a poison and while allegedly not deleterious immediately in the portions advocated for use, it is certain that an overdose is lethal. Why risk a lethal poison in our water systems? That is giving our enemy the opportunity of poisoning and killing thousands of our people with the one bullet of an overdose of fluoride in our water systems. This thought disturbs me no end. During the last war I was an agent in the Counterintelligence Corps. One of our jobs was security of our military installations. In that our first concern was always the water tower and/or water distribution system. With fluoride readily available, and with the machinery set up for its entry into the water systems of the Nation, we would have a national security risk far greater than the atom bomb. How can we be so foolish as to give our enemy such an advantage? The overpowering of the man in charge of entering the fluoride into the system, the infiltration of an enemy into that job, or the surreptitious entry of an overdose of fluoride into our water would kill half of our population before we knew what was wrong because it cannot be detected, it has no smell and has no taste.

Thirdly, putting this security risk aside for the moment, consider what the toxic effect of fluoride even in the small amounts advocated, will have on our people in 10 or 20 years hence. No one knows. The tests to date do not prove that it will have no deleterious effect. It is only in an experimental stage. We must positively know that it will not have a deleterious toxic effect on one single citizen. Unless we know this, we cannot risk it by impressing it on all citizens.

I say, if people want it, let them go to their own dentist to get a treatment, but do not force it on all people for the alleged benefit of children just getting their second teeth. How can we ever justify these grave national risks when only a segment of our child population could possibly benefit and when even that benefit is not proven conclusively?

Please give serious consideration to these things. Sure, you and I are both for progress, but certainly not at the risk of people's health and lives.

Please support H. R. 2341 which will outlaw the use of fluoride in water for general use in hospitals, post offices, and military installations.

Please vote against H. R. 7397 which would give the Surgeon General a free hand over the use of fluoride. This could lead to national disaster.

Respectfully yours,

CHARLES C. DEUBEL, Jr.

MEDICAL EVIDENCE AGAINST FLUORIDATION OF PUBLIC WATER SUPPLIES

(By George L. Waldbott, M. D., Detroit, Mich.)

NOTE.—Dr. Waldbott has published more than 100 scientific papers on original research on various phases of allergy, and one book entitled "Contact Dermatitis." Dr. Waldbott is the vice president of the American College of Allergists, a Fellow of the American College of Physicians and of the American Academy of Allergists, as well as of other national and international societies in his specialty.

Health and dental groups introduced the project of adding fluorides to the domestic water supplies because a lowered incidence of dental caries was observed in areas where fluorides occurred in the water naturally.

May I preface my remarks by explaining why I am interested in this subject. As an allergist, I have seen much serious trouble in allergic patients caused by indiscriminate medication. Moreover, the opposition to fluoridation has thus far depended largely upon nonprofessional people for leadership. In general, competent medical men have either been too busy or have not yet given the problem adequate attention to oppose the powerful groups pressing fluoridation. Naturally, the view of a practicing physician like myself differs from that of health officers, research people and dentists.

In this controversy two facts must be acknowledged from studying the available literature: First, this drug has a tendency to settle in the tooth enamel rendering it denser, harder, and more resistant in children under the ages of 10 to 12. However, whether this actually means healthier teeth has not been proven. Second, in the concentration in which fluorides are being added to drinking water, they are not likely to induce acute fulminating poisoning. However, the probability of chronic poisoning will be discussed at length later. Do these two facts justify the "calculated risk" of which the proponents of this plan speak when they require every individual in the community to drink water containing fluorides, rather than to permit dentists to prescribe the drug when they consider it necessary?

I shall discuss the medical aspect of the fluoridation problem by elaborating upon the following points:

1. Can there be a "safe concentration"?
2. Is the value of fluorides scientifically proven?
3. Is there danger of disease and death from fluoridation?
4. What methods are being employed in some scientific circles to promote this program?

There are many political, social, and legal aspect involved in the controversy upon which I shall not touch.

1. SAFE CONCENTRATION

From animal experiments and statistical studies in humans, the proponents of the plan conclude that a concentration of 1 part of sodium fluoride in 1 million parts of drinking water by weight (1 p. p. m.) entails no harm. According to dental research authorities, mottling of the tooth occurs at 0.7 p. p. m. and a mottled tooth is a poisoned tooth. Therefore, how can the concentration of 1 p. p. m. be called "safe"?

If animals are fed diets containing 7 to 12 p. p. m. the first signs of poisoning begin to appear. The incisor teeth become chalky, pitted, and corroded. The bones and kidneys show minor degenerative changes.

Other findings are damage to the liver, to the stomach and bowels, and to the tissues surrounding bones and teeth. The animals loose their appetite, they may develop anemia and brain disturbances. (1.)

When fluorides are taken into the system through ingestion by mouth, a large portion reaches the bloodstream by penetrating the mucous lining of the intestinal tract. It is then distributed by the blood to bones, teeth, kidneys, liver, spleen, brain and other organs where about 10 percent is retained for many weeks or even months. (2.) The remaining 90 percent is then eliminated from the blood mainly through the kidneys in the urine and through the skin in the sweat.

Reactions in the human body differ from those in a test tube. Every single phase of the above metabolic process is subject to tremendous individual variations. Blood samples, for instance, of individuals in the artifically fluoridated city of Newburgh showed variations of as much as 900 percent (3.) in spite of the attempted regulation of the "safe" 1 p. p. m. intake of fluoridated water.

There are many reasons why this intake of 1 p. p. m. cannot be properly controlled and maintained in a person drinking such water. What, for example, about simultaneous ingestion of fluorides in food? Tea, for instance, contains 30 to 60 p. p. m. For a habitual tea drinker, therefore, this drink would bring the daily intake of fluorides just within the safe limit. If, in addition, he were to eat food grown in a fluoridated area which contains much larger amounts than usual, and if this food were boiled in fluoridated water, thus concentrating the fluorine content further, the intake would most likely reach toxic levels. Furthermore, if an individual has diabetes or a disease accompanied by fever his water intake could rise so much higher that this might conceivably decide the course of his illness.

The amount of fluorides absorbed from the bowels is greatly influenced by the acidity of the bowel content. Furthermore, sodium fluoride which is added to the water supply is much more soluble than organic compounds containing fluoride present in water of naturally fluoridated areas. Therefore, much more will be absorbed through the bowels under the artificial scheme than in an area where it occurs in nature. The condition of a person's teeth, bones, kidney, liver, and brain—especially their calcium content—determines how much fluorine is retained in these organs. Thus, under certain circumstances the 10 percent figure of fluorine retention may be considerably exceeded.

The elimination of the fluoride salt through the kidneys is of special importance for a patient with a diseased nonfunctioning kidney. Much less can be eliminated; in other words, much more is retained in his system for potential development of toxic symptoms. There is a great likelihood of extensive damage from this salt in elderly individuals who notably have a tendency to arteriosclerotic, poorly functioning kidneys. What will happen to such individuals after drinking such water year after year can only be imagined. Finally, there are further individual differences in the event that a person is allergic. I should like to refer to my own experimental work published a year ago on "Drug Tolerance in Asthma" (4.). It was demonstrated that an asthmatic patient may be poisoned by otherwise harmless doses of any given drug. I am not referring here to allergic symptoms, but to true poisoning from otherwise harmless amounts of such drugs. This was observed clinically and proved experimentally. One cannot escape the conclusion that there may be considerable damage to a large part of the population from artificially fluoridated water in the so-called safe concentration of 1 p. p. m. for everyone in an entire community.

II. APPRAISAL OF THE VALUE OF FLUORIDATION

In their pamphlets the health authorities promise a 63 percent reduction in dental caries if fluoridation is adopted. This figure is derived from statistical studies in such fluoridated cities as Grand Rapids and Newburgh. The teeth of school children drinking this water were examined and the number of cavities recorded periodically. This evidence is not accepted by some leading dental research authorities. Hurme (5), for instance, points to the many pitfalls in compiling statistics of this kind, especially to the lack of standardization of the methods employed, to the personal bias of the examiner, and to the relatively short period of observation.

Let me give an example of the confusion: Mottling of teeth is commonly found in fluoridated areas and is identified with beginning fluoride poisoning. (6.) Most proponents of fluoridation consider a mottled tooth aesthetically undesirable rather than diseased. Such a divergence of opinion is bound to affect the statistical appraisal of healthy teeth, and this alone renders the statistics inadequate. In addition, Boyd and Wessels (7.) state that repeated examinations of the same tooth made by the same examiner at different times may result in a different interpretation from one examination to another.

Furthermore, children who have periodic examinations of their teeth are usually at the same time alerted to the importance of good dental hygiene, good nutrition, and elimination of sweets and soft drinks.

Finally, most statistical reports disregard the observation of such thorough students of the subject as Smith and Smith (8). They found that individuals in fluoridated areas, who as children showed an apparent reduction in dental caries, after they had passed the age of 21 manifested much more extensive deterioration and weakening of the tooth structures than those in nonfluoridated areas. A similar observation is related by Newman (9.) in two suburbs of Sheffield, England. He and other observers have noted in various publications that people in areas where the water is practically fluorine free have excellent teeth. Therefore, the 63 percent reduction in caries from fluoridation of water is not substantiated.

III. HAZARDS OF FLUORIDATION

Why are there no reports of disease and deaths from fluoridated water? In distinction from acute poisoning, symptoms of chronic fluoride poisoning are vague and insidious. Nausea, general malaise, joint pains, decreased blood clotting, anemia, and similar vague symptoms may result from a variety of causes and do not represent a clearcut disease syndrome. Even an extremely well-trained clinician is not likely to make the correct diagnosis. When a patient finally succumbs to a kidney or liver disease, it is practically impossible for the average physician or pathologist to trace the disease to its true cause. Health authorities and some dentists do not take this into count. Indeed, in two municipalities of metropolitan Detroit, physicians are so little aware of this problem that I found hardly a single doctor who knew that he, personally, was drinking fluoridated water.

Shouldn't we expect a significant rise in the death rate from kidney, liver, and brain diseases in fluoridated areas if there is chronic intoxication from poisoning? First let us consider that such diseases and death in naturally fluoridated areas are much less likely to occur than in artificially fluoridated ones because

of the above-mentioned lower solubility of organic fluorides as compared to sodium fluoride. Furthermore, vital statistics on diseases which are difficult to diagnose, notoriously furnish very unreliable information. I personally observed, in reviewing deaths from bronchial asthma, that the majority of deaths recorded in death certificates represented asthmalike wheezing from other sources. Similarly, without an autopsy even the most expert clinician would find it extremely difficult to establish the diagnosis of fluorine poisoning. There is evidence which, however, cannot be fully corroborated because of insufficient published information that Grand Rapids deaths from kidney, heart, and brain diseases have increased since 1945 (10).

The benefits derived from fluoridation have been compared with those from penicillin. In 1949 I reported the first death from penicillin ever reported in literature (11). Since that time nearly every general practitioner, certainly every allergist, has observed serious reactions, near deaths, and even deaths from this drug. I recognize the value of penicillin as much as anyone; I use it extensively in my practice; however, like other competent physicians I am against its indiscriminate use. Assume, for instance, that this otherwise harmless drug were given every day to everyone in the country in very small doses for prophylactic purposes. Based on my extensive studies on human anaphylaxis which were carried out in 1933–36 (12). I would have to conclude that the results would be disastrous. Similarly, it will take many years and much careful and thorough clinical observations by competent physicians to evaluate the potential harm of fluorides. I predict that once the first fluorine death is reported, others will be recognized in rapid succession.

I have attempted to set forth why there can be no such thing as a safe concentration, why statistical evidence concerning the benefits of fluoridation is unreliable, and why thus far no serious illness and no fatalities from this cause have been reported. Whereas I have endeavored to keep this discussion on a factual basis, I cannot help but refer to the method used by health and dental authorities in promoting this program and smothering opposition.

IV. HOW THE FLUORIDATION PROGRAM IS PROMOTED

In practically all the voluminous literature on the subject hardly a paper is published which does not capitalize on the fact that there is no organized medical opposition. "No scientific point of view" (13). "Persons misled either by emotional prejudice or by lack of knowledge" (14).

In a very informative article issued by the Commission on Chronic Illness (15), such leaders of the profession as K. F. Maxcy, E. J. Stieglitz, and N. Shock present throughout the text the safety of the fluoridation project as an incontrovertible fact. In their last paragraph, however, there is the inconspicuous note "evidence does not absolutely exclude the possibility of risk."

Heyroth, of the Kettering Institute (16), another stanch proponent of fluoridation, assembles all the available data on the possibility of toxicity from fluorides in an excellent contribution. The author sets out to convince the profession of the safety of fluoridation, yet at the end of the paper he makes a plea that evidence of toxicity in patients with chronic nephritis be sought. He recommends that such patients should buy nonfluoridated water if residing in a fluoridated community. He disregards the well-known fact that many patients are ignorant of suffering from this disease.

Practically all publications convey the impression to the reader that dental caries are primarily the result of lack of fluorides. Even if lack of fluorides in food and water were to play a part in the production of caries, the fact remains that such other causes as dietary digressions, lack of vitamins, glandular deficiencies, allergies, and many other factors are equally, if not much more, responsible.

In an attempt to prove the harmlessness of fluoridation, many of the articles claim that fluorine is a trace element necessary to good human nutrition similar in action to iron in forming red blood corpuscles and to iodides in counteracting goiter. This is contradicted by numerous sources (17).

None of the papers mention the excellent work by Taylor (18) who fed fluorides to a large number of mice in the so-called safe concentration. They developed cancer much sooner than the control group which was fed a fluorine-free diet. Also ignored is the work of Harris (19) which proved that hamsters fed corn and milk from Texas developed only half as much dental caries as those fed corn and milk from New England. His work clearly indicates that not lack of fluorides but vitamins were involved in the reduction of dental caries.

All this data indicates that most of the evidence presented by the proponents of fluoridation on the question of safe concentration, possible danger and on its value in preventing tooth decay is not convincing.

Why is there so little medical opposition to fluoridation? From personal contact with competent physicians and dentists, I know that there is a strong potential opposition. These never, however, wonder why scientific medical organizations officially endorse the program. I am told by a member of the house of delegates to the AMA who attended the meeting at which the principle of fluoridation was endorsed by this body that he personally was not informed sufficiently in advance to carefully appraise its drawbacks. He states that the vote was taken so precipitously that there was little chance to oppose it. Further you know that "the councils on pharmacy and chemistry of the AMA purposely refrained from making any recommendation that communities support or oppose projects for the fluoridation of water supplies." "The house of delegates did not urge or recommend that any communities undertake to fluoridate their water supplies." (Quotation from the statement of the AMA.)

Other physicians are overwhelmed by the vast repetitious information presenting the proponent aspect and puzzled by the absence of opposition. For instance, at present every member of the American Academy of Pediatrics is receiving a propaganda pamphlet—not a scientific paper—advocating fluoridation. This is likely to result in another endorsement of a scientific group. Furthermore, they cannot find literature against fluoridation in competent medical and dental journals. It is evident that conventional dental publications do not accept scientific material representing the other side. For such information one is obliged to search in second-rate journals. Moreover, doctors scientifically qualified, hesitate to oppose the project lest they jeopardize their standing among colleagues, their practice, and their medical appointments. They do not want to be identified with those who oppose the project on religious, political, and emotional grounds.

Let me conclude by reminding you of what happened in the early twenties. A drug much less harmful than sodium fluoride, namely, sodium iodide, was added to the public drinking water of some Michigan communities for the prevention of goiter. McClure and coworkers (20) soon noted a marked increase in the incidence of mortality from toxic goiter among those disposed to it. Immediately the health authorities who had promoted this scheme made iodine available in table salt instead. Now, anyone can partake of it or not according to his need.

Why do we not follow this example? Fuorides are now available to be taken as a tablet in water or milk, or they can be painted on the teeth of those who wish to avail themselves of their benefits. At present, neither the benefit nor the safety of fluoridation of water supplies are sufficiently proven to warrant experimentation with human life.

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CITIZENS MEDICAL REFERENCE BUREAU, INC.,
New York, N. Y., May 24, 1954.

Hon. CHARLES A. WOLVERTON,
Chairman, Committee on Interstate and Foreign Commerce,
Congress of the United States, Washington, D. C.

HONORABLE SIR: We thank you for your letter advising of the hearings on H. R. 2341, known as the Wier bill, beginning Tuesday, May 25, and running through Thursday, May 27.

While other commitments will not permit of us attending on such short notice we wish to go on record as approving the Wier bill. It is a positive effort to assure the medical freedom of the people of this Republic, which is being seriously threatened on every side by the proponents of fluoridation.

The Wier bill is an absolute necessity in the face of the elastic law of the Pure Food and Drug Administration, which permits of too much freedom in the application of the law within the discretion of the administrators. It is this weakness in the law which is being invoked by municipalities, which have forced fluoridation upon communities without benefit of the ballot:

"The Pure Food and Drug Administration has accepted the findings of the United States Public Health, that 1 part per million of fluoride added to the drinking water is harmless."

Those who have done the most research with fluoride, among them Drs. Leo Spira, of New York; F. C. Exner, of Seattle, Wash., and Dillon, of Scotland, hold a diametrically oppositive view.

The fluoridation of the potable water supply is to say the least, a controversial issue, as any physician or dentist who has taken the time to review the available literature on the subject will be obliged to admit.

Fluoridation of the public water supply is strictly individual treatment in mass operation; it is prescribing medicine without benefit of diagnosis or individualization of dosage; it is a treatment and not a sanitary or hygenic measure; it can no more be condoned than would be the medication of bread or butter to prevent a disorder of the physical organism.

There is ample provision in medicine to satisfy the mothers and fathers of children who wish to have the teeth of their offspring treated with fluorine without placing the health of the entire population in possible jeopardy or to compel them to accept medical treatment without desire or consent.

Fluoridation is unquestionably mass medication in its most vicious form—that of compulsion; further, it is a direct step in the socialization of medicine.

As a national organization representing the voice of 70 million people who revere medical freedom as guaranteed to the people of the Republic, we wish to go on record as approving the bill H. R. 2341, known as the Wier bill, designed to forbid by Federal statute the fluoridation of the potable water supplies of the Nation.

Our background of 35 years' experience in dealing with the problem of compulsory medical legislation in the interest of preserving medical freedom, we believe, qualifies us in matters of this kind.

We submit that in all or long experience nothing as directly compulsory involving the whole Nation has come to our attention, and considering the great power that is being brought to bear by the United States Public Health Service, the passage of the Wier bill, is indeed urgent.

We, in the name of medical freedom and liberty plead that the Wier bill be passed, and ask that our wholehearted approval go on record.

Respectfully submitted.

PIERREPONT E. TWITCHELL,
President.

WASHINGTON, D. C., *May 27, 1954.*

Re H. R. 2341, Antifluoridation.

Hon. CHARLES A. WOLVERTON,
Chairman, Committee on Interstate and Foreign Commerce,
House Office Building, Washington, D. C.

DEAR SIR: We, the people, do not want fluoridation in our drinking water. I do not take medical drugs of any kind, and I do not want sodiumfluoride—rat poison—in my drinking water. They are putting it in the water, to make profits for the huge aluminum trust, the medical trust, the chemical or drug trust, and the equipment makers.

From the Congressional Record of March 24, 1952: "A check of vital statistics of Grand Rapids, Mich., which is the only city of size that has had artificial fluoridation for more than 4 years, shows that the death rate has increased 50 percent in this time; from heart trouble, 50 percent; kidney trouble, 50 percent; and brain lesions, 50 percent."

We only drink 5 percent of the city's water supply and the other 95 percent of fluorine is washed down the sewer. Why should we have to pay the heavy expense of wasting fluorine in the city water and make ourselves sick by drinking the poison?

In Dr. Dean's report on May 27, 1954, for the American Dental Association, they say that when a tooth decays, it is never repaired again by nature, and that fluorine merely keeps the tooth from decaying more.

If a tooth never repairs the decay in a tooth under a medical dentist, it is because the dentist knows nothing about nature-cure methods. Mr. Howard V. Inches, a nature-cure health lecturer, had the enamel blown off his front teeth by a buz-bomb explosion in World War II, he said, and he has now grown the enamel back onto his teeth.

A lady told me she took the enamel off her teeth by using a highly advertised toothpaste, and that she grew the enamel back on through correct diet—nature-cure diet. The medical doctors don't know anything about natural diet and don't want to know. There is no money in keeping people well, it seems.

If people can't get fluorine taken out of the water, they certainly can move back onto the farms and be safe for awhile, and in the meantime they can vote out the people who advocate it. I don't think the big property holders would like that, because the price of real estate will go down when people leave the cities.

Fluorine is injurious to people, and we are not going to have it in our water, even if we have to vote the people out who advocate it.

Sincerely yours,

ANNA M. FERGUSON.

A COMPARATIVE STUDY OF DENTISTRY IN NATURAL FLUORIDATION AND NONFLUORIDATION AREAS

Data taken from A. D. A. Directory 1947

1. NONFLUORIDATION AREA

Baltimore, Md., with a population of 859,100, had a registration list of 510 dentists. Approximate service, 1 dentist to every 1,684 people.

Out of 510 dentists are listed the men performing specialized work.

1. Oral surgery, 13; 2. Orthodontia, 11—(deformity); 3. Denture work, 10; 4. Children, 3.

2. FLUORIDATION AREA

Houston, Tex., with a population of only 384,514, had a registration list of 285 dentists. Approximate service, 1 dentist to every 1,350 people.

Out of 285 dentists are listed the men performing specialized work.

1. Oral surgery, 12; 2. Orthodontia, 20—(deformity); 3. Denture work, 8; 4. Children, 2.

These figures and facts prove the detrimental influence of the fluoridation program.

Take Colorado Springs, Colo., with 75 years of background, published in May A. D. A. Bulletin of Information, with the population of 37,789 with 46 dentists; ratio approximately 1 to 800 people. Hereford, Tex., with population 2,584

with 3 dentists; ratio approximately 1 to 800 people. Bethesda, Md., nonfluoridation area, population 30,000 with 13 dentists; ratio approximately 1 to 1,684 people.

COMMENTS

Is the dental profession interested in saving children's teeth? If so, why does A. D. A. report in the two cities of Baltimore, Md., with 510 dentists, and Houston, Tex., with 285 dentists, a total of 795 dentists with only 5 dentists specializing on children's teeth? Total population of these 2 cities 1,243,614. A. D. A.-A. M. A. fluoridation fantasy is not the answer. Poison never made a normal, healthy cell and never will. Codliver oil, calcium medication, exercise, fresh air, sunlight and pure water reach into all the haunts of life and impart that touch of nature, when obeyed, furnishes the open sesame to the miracle of life.

GEORGE J. BRETT, D. D. S.,
Lancaster, Pa.

FLUORIDATION—FRIEND OR ENEMY—STATEMENT IN SUPPORT OF H. R. 2341 PRESENTED BY ANTHONY J. ROMEO, PRESIDENT OF THE NEW YORK STATEWIDE COMMITTEE OF THE PURE WATER ASSOCIATION OF AMERICA

This age of modern living has set up such a terrific pace, we could conceivably lose our balance in the mad rush to keep up with the world. New ideas and schemes pop up with such frequency, we hardly have time to understand them all. Consequently, the people of our country could quite possibly commit suicide by taking a very passive attitude when they should demand complete education on new developments. This is especially true in cases where the economical structure of our country or the health of the people is concerned.

Fluoridation is probably one of the greater puzzles of this modern age. Much has been said about it, and it is surprising how many people have accepted it as just another step toward easier living, without ever questioning the ultimate benefits or the dangers. Unfortunately, some of our professional men in high places have lent their titles and names to the scheme without, in many cases, making a thorough study of the proposal. Dr. A. L. Miller, Representative from Nebraska, who took part in the congressional hearing on fluoridation in 1952 feels that most of the proponents of the plan have done little if any research on their own and that they are merely parroting one anothers' opinions.

I have found this to be true. Hundreds of people I have talked to seem for the most part to fit into one pattern. If they are for it, they are poorly informed or misinformed. They seem to feel that the doctor so and so is a man of integrity and could not be wrong. They do not stop to consider that possibly doctor so and so has been misinformed or as Dr. F. B. Exner has suggested, possibly certain dentists are being pressured into carrying the ball for the fluoridators. On the other hand, I find that those who are well informed on the matter are for the most part against the practice completely or want more time for sufficient study on the matter.

In a recent broadcast, one of our top columnists suggested that the 99 percent assurance of safety for the new polio serum wasn't good enough. Yet a lot of people who should know better accept fluoridation wholeheartedly when the percentage of safety leans considerably toward the danger mark.

Fluorine itself is an inorganic corrosive; a cumulative poison that could hardly be accepted as an inoffensive element when it is admitted that even a sound and healthy kidney can only dissipate 90 percent of the effect at its best. What will happen to those with ailing kidneys, such as people who suffer from uremic poison for example?

We concede that certain tests are being conducted in Newburgh and Kingston, N. Y. We are not satisfied, however, that these tests will be conclusive. First of all, we understand these tests are supervised by proponents of fluoridation; secondly, we hear that statistics coming out of Newburgh are not telling the whole unvarnished truth of the matter.

Let us consider, for instance, the statistics given us by the observers at Newburgh. It is claimed that there has been a greater reduction in tooth decay among the children in Newburgh than in the control city of Kingston. However, in the overall picture, the total defects in children of school age are 100 percent greater in Newburgh than in the control city, according to the 1952 statistics of the Department of Education. Why? Could it be that although tooth decay

is reduced—other defects are induced? Only an honest study can give us the answer. One of the greatest faults the promoters of fluoridation have is they want to be heard, but refuse in a great number of cases to allow the opposition to present its side. This is, of course, a deplorable situation. If, as the promoters would have us believe, fluoridation is beyond reproach, why then deny the other side the privilege of at least asking questions?

We believe that the only way to resolve a question is to have both sides present their cases. Only with all the facts can we be certain of the success of a proposition. The newspapers have in many cases been taken in by the peddlers of fluorine. This, we can say with conviction, is part of a plan set up at the fourth annual conference of State Dental Directors with the Public Health Service and the Children's Bureau, held in the Federal Security Building, Washington, D. C., June 6–8, 1951. The Parent-Teachers Association was also included in this plan along with anyone of importance that could be hoodwinked into taking up the battle cry for fluoridation.

Many communities have been allowed a vote on the subject of whether or not to fluoridate their community. In many cases, success for fluoridation comes only when the public had been given but one side of the proposal. Many communities are not even consulted. The city administration puts it in after advice or harping by pressure groups.

The general feeling of the opponents of fluoridation seems to be that all has not been told or learned about the plan. That not enough time has elapsed for study. That it is unconstitutional to force medication upon 100 percent of the population to partially benefit a very small percentage. That the profluoridators have not told the whole story honestly and truthfully. That they have led people to believe artifically produced inorganic sodium fluoride is exactly the same as calcium fluoride as found in its natural state in foods and water supplies. The protesters of mass participation also hold the conviction that the promoters are claiming as facts, much data that has long been proven false.

Fluoridation is no different than chlorination, vaccination, or pasteurization is a claim often held by the advocates of fluoridation. This is without question a very misleading statement. First of all, you do not have to partake of pasteurized milk. You can, however, do so by choice. Vaccination is a method of preventing a communicable disease as is chlorination. Tooth decay is not a communicable disease and nothing can be gained by fluoridation that cannot be gained much more effectively by at least 10 other methods. These methods are direct treatments for those who desire them without forcing aged and infirm people to ingest a poison that cannot possibly help them, but can very readily hurt them.

An amazing fact that disturbs us is why so many dentists and doctors are for fluoridation while equally qualified medical men are against it. It is inconceivable that both are right. Our explanation is as stated previously. Those for it, do not have all the facts or are being pushed into it. Those who have made a study of it are definitely opposed to the whole proposition.

Many of us are beginning to look at the human race (and I use the term loosely in the light of recent events) and wonder if it realizes exactly in what direction it is headed.

When a newspaper or radio station gives free time to proponents but refuses any time whatsoever to the opponents, then America had better look to its future with much concern.

The emphasis on children is tremendous. No one is adverse to our children having things somewhat better than their forefathers. But is it necessary to say to them "All right son, you can eat all the candy you want now, we have fluorine in our drinking water"? Have we coddled our children to the extent that we are willing to shorten the life of our neighbor so that they can have an extra candy bar?

I would like to ask the promoters this question: Would any one of you fluoridators bare your arm and allow me, a local barber, to inject into your arm a shot of penicillin, not just one of you but all of you? Reason? There is a little child up the street, who is on the verge of pneumonia and needs a shot of that drug. You'll say, "Why should I take it just because some kid has pneumonia?" Well, aren't you asking us to take fluorine because a kid does not want to brush his teeth? "But," then, you say, "you are not a doctor to go around medicating people." The answer is, neither is the man who doctors our water supply with a poison.

Gentlemen, I am going to draw a little parallel here if I may. We have laws that prevent us from killing or even harming the birds of the air. We protect

likewise by law the animals in the forests. They cannot be slain out of season, or at all in many instances. But if a human being is killed in the woods, we call it an unhappy accident and very seldom punish the slayer with even the loss of his license. Awhile ago many good Americans made themselves heard way to Washington when they protested the use of cats and dogs and other potential pets as victims in medical experiments. We send to jail anyone who dares to pollute the streams with anything that may destroy the fish therein. The Society for the Prevention of Cruelty to Animals vigorously brings to task anyone who dares abuse an animal. Gentlemen, would it be asking too much if we beg of you to treat us at least as the equal of animals of the air and the forests and the dumb brutes of the farmyard?

A warning was sent out from the Department of Agriculture to farmers, concerning the dangers of using fluorine on brood sows. Still, who in this great Government of ours has sent out an alarm that possibly expectant mothers are in great danger from the same poison? A few years ago we were hard pressed to find potatoes that were not half rotted or scabby or both. I chanced to call on a farmer friend of mine. I found him cutting up some of the most beautiful potatoes I had ever seen. "Sell me some," I implored. "Do you want me to go to jail?" he answered. "These potatoes are a cent-a-bag potatoes from the Government, and I don't dare take one into my own house to eat. They are for the pigs." I couldn't help musing, "Great country we've got. The pigs eat better than we do."

I've been told that it is corny to talk patriotism. We have been told not to use the slightest emotion when appearing before this committee. Gentlemen, I tell you this: Perhaps the fluoridators can stand before you begging to be allowed to proceed with a coldhearted commercial proposition, but we who spend our own money and time and effort (and some of us can ill afford to) speak to you and implore you to stay the hand of the poisoner and we cannot help displaying the emotion we feel in our hearts. Who can love or sing or watch a ball game without emotion? Can you truthfully say you could face a loaded weapon without emotion?

My friends, I only wish you had the great privilege that I have had here in Washington the last few days. I wish you could be near to these good people who came from the far corners of this great country of ours to protect it. They are men and women with determination and hearts that beat with the tempo of the marching feet of the soldier who is willing to sacrifice his all that this country may survive. I don't see doctors, dentists, scientists, housewives and such in this group. No, gentlemen, I see the little group huddled together at Valley Forge who so valiantly stood up under terrific hardship and fantastic odds to shield the neighbor they loved.

On the benches here I don't see Mr. Smith, Representative Brown, or Congressman Jones. I see great leaders and fearless statesmen of old, who had the courage of their convictions and feared not to speak with truth regardless of the outcome. You are the people in whom we place our faith. Please don't let us down. Today we are either surrendering or being relieved of our hard-earned liberties, one at a time, day by day, year by year, until the democracy we paid so dearly for will have completely disappeared to high government. This fluoridation is just another method of taking away another liberty. That is why we are fighting, my friends, because we feel that a liberty that is not worth fighting for is not worth having. Please, sirs, we implore you, don't take away these liberties. Give them back to the people who gained them. Please, gentlemen, give us back our country.

SAN FRANCISCO, CALIF., *May 5, 1953.*

Re *Mrs. Frieda Zwerling* v. *City Water Fluoridation*

SAN FRANCISCO HEALTH SERVICE,
City Hall, San Francisco, Calif.

(Attention: Water Department.)

GENTLEMEN: In January 1953 Mrs. Frieda Zwerling, 1865 Oak Street, San Francisco, came to my office with a very distressing dermatitis of the whole body, a badly cracked and swollen tongue, painfully inflamed inner cheeks, and deep cracks at either corner of the mouth.

The source of this very painful condition was not determined at the moment. When remedies prescribed failed to relieve, she discontinued drinking the city water and in a few days the mouth conditions were healed.

The natural conclusion was that perhaps discontinuing bathing in the city water might relieve the general dermatitis. This proved to be true with the exception of slight irritation which entirely disappeared when her garments were not washed in the city water.

You can imagine the plight of this woman as she is deprived entirely of the use of city water, and small wonder that she objects to drinking of the poison that she finds in insect and rat poisons.

The patient also informs me that she finds a great many of our citizens in a similar plight, which is to be deplored.

Very truly yours,

A. R. GOULD, M. D.

P. S.—A brief personal report: I live in Los Altos, spend 4 days a week in my office in this city and find the frequent washing of my hands in the city water has for some time brought about a dermatitis which is also deplorable.

ROGERS PARK, ANCHORAGE, ALASKA,
April 19, 1954.

Re H. R. 2341.

Hon. CHARLES A. WOLVERTON (Chairman) AND MEMBERS,
House Interstate and Foreign Commerce Committee,
House Office Building, Washington, D. C.

GENTLEMEN: A careful 3 months' study of all phases of fluoridation, particularly testimony in hearings before the Delaney committee, conference proceedings, State dental directors with the Public Health Service, Washington, D. C., June 1951, and correspondence with citizens' groups in many states, including Scotland, convinces us fluoridation was never intended for the public welfare.

We find a premeditated, concerted, determined policy of deceit, evasion, concealment of facts, and coercion being used by fluoridation proponents, with spirit of contempt for democratic government, congressional action, constitutional law, and flagrant disregard for individual and public rights and welfare.

We beseech, therefore, that Federal legislation be enacted to prohibit fluoridation of public water supplies; further, that complete investigation be made into the policies and people responsible for this federally initiated and federally promoted fluoridation program, including executive personnel of the United States Public Health Service, Department of Health, Education, and Welfare, American Dental Association, and any and all other persons or organizations, who, knowing all facts, continue to pressure communities to fluoridate without revealing those facts.

It is also respectfully asked that such investigation be carried through to full, just prosecution of all guilty of this unprecedented violation of the public trust, rights, and welfare, and maluse of public funds; further, that careful scrutiny of public relations policies governing the United States Public Health Service and Department of Health, Education, and Welfare be made, and action taken to restore such policies to guidance of moral, constitutional, ethical principles.

Scores of citizens here join in this request, many of whom, by reason of their positions and responsibilities, are giving their utmost for the public protection, health, and security in this area.

Thank you for your earnest consideration of the rights, health, welfare, and security of Alaskan citizens as well as all under the American flag.

Respectfully submitted.

MRS. ROBERT H. CRANE.

The CHAIRMAN. The first witness on behalf of the opponents this afternoon will be the representatives of the American Dental Association. I would be very glad if those who are present representing that association will indicate the order of their witnesses.

STATEMENT OF FRANCIS J. GARVEY, SECRETARY, COUNCIL ON LEGISLATION, AMERICAN DENTAL ASSOCIATION, CHICAGO, ILL.

Mr. GARVEY. Mr. Chairman, my name is Francis J. Garvey, of Chicago, Ill.; I am secretary of the council on legislation of the American Dental Association.

I would like to call the attention of the committee to the fact that there have been 8 cases decided with respect to water fluoridation, and in 7 of them it was held within the police power of the State. If the committee would desire, I should be glad to file a copy of them for the record, or otherwise we will ignore it.

The CHAIRMAN. I think it would be helpful if we might have them.

Mr. HESELTON. What are those cases?

Mr. GARVEY. *Kraus* v. *City of Cleveland* (116 N. E. 2d, 779). These are all nisi pri United States cases, except one.

The CHAIRMAN. Suppose you give the statement for the record.

Mr. HALE. Suppose you give the States in which the cases were decided.

Mr. GARVEY. Ohio was the first State. The statement here does not have the State on it.

DeAryan v. *Butler* ((Calif.) 260 Pac. 2d, 98 (certiorari denied by the Supreme Court of California)).

That was a case that was heard in an intermediate appellate court of California, and it is now, I believe, on appeal to the United States Supreme Court, and it has not been decided.

Kaul against City of Chehalis, Wash., now on appeal, No. 32370, to the Supreme Court of Washington.

McFarlane against Mayor and City Council of Baltimore, decided in the Circuit Court of Baltimore City.

McGurren against City of Fargo, N. Dak., No. 7368, on appeal to the Supreme Court of North Dakota.

Dowell against City of Tulsa, Okla., No. 36,068, now on appeal to the Supreme Court of Oklahoma.

In each of those cases the district judge decided it was within the police power of the State, under the prevailing laws of the State, to fluorinate water in the interest of the public health.

The one adverse decision is the one to which reference has been made, Chapman against The City of Shreveport, which is now on appeal by the proponents of fluoridation to the Supreme Court of Louisiana.

Gentlemen, I will take no more of your time, but would like to introduce to you Dr. E. Harold Gale, chairman of the council on legislation of the American Dental Association.

Mr. HESELTON. May I ask you what the booklet you have is?

Mr. GARVEY. This is the appeals brief to the Supreme Court of Louisiana. If you would be interested in it, I would be glad to make a present of it to the committee.

Mr. HESELTON. I think we would be glad to have it.

(Two of the documents referred to above were submitted for the record and are as follows:)

CIRCUIT COURT OF BALTIMORE CITY

Filed November 12, 1952

IAN ROSS McFARLANE AND HARRY C. HOFFMAN v. *MAYOR AND CITY COUNCIL OF BALTIMORE CITY ET AL.*

H. Clifton Owens and Louis E. Bowen for plaintiffs

Thomas N. Biddison, city solicitor; Edwin Harlan, deputy city solicitor; and F. Clifford Hane, assistant city solicitor, for defendants

MUNICIPAL CORPORATION—FLUORIDATION OF CITY WATER SUPPLY

Complainants filed a bill of complaint to restrain the mayor and city council of Baltimore, the commissioner of health, and the water engineer from proceeding with the proposed plan for the fluoridation of the Baltimore City water supply. Held that the evidence discloses that the ingestion of fluorine in the city water in the limited quantity proposed would not be deleterious to the health of the people of Baltimore City, and is not a calculated risk of any kind.

One of the complainants challenged the constitutionality of the proposed program on the ground that the introduction of fluorine into the water would compel him to violate one of the basic principles of his religion in that it would force him to use medication. Held that none of the constitutional rights of the plaintiff, Hoffman, to freedom of religious belief would be invaded or violated by the adoption of the proposed program.

The mayor and city council of Baltimore has the authority under the city charter to authorize the commissioner of health and the water engineer to carry into effect the fluoridation of the city water supply as a health measure for the prevention of partial decay of teeth.

MANLEY, J. (orally):

The purpose of the bill of complaint which was filed in this case was to obtain a temporary restraining injunction prohibiting the defendants, the mayor and city council of Baltimore, Dr. Huntington Williams, the commissioner of health, and Mr. Joseph S. Strohmeyer, water engineer of Baltimore City, from introducing fluorine into the water supply of Baltimore City until a hearing has been had in this matter, and to permanently restrain the defendants from introducing fluorine into the water supply of Baltimore City. The bill of complaint was filed by two complainants. One of the plaintiffs, Mr. McFarlane, not only did not testify in the case, but he did not, as far as I know, make his appearance in the courtroom. At least I have not seen him in the courtroom during the several days that testimony has been taken, and no explanation has been given for his absence.

In the bill of complaint the plaintiffs allege that fluorine is a toxic substance and its effect on the health of the people of Baltimore City is likely to be deleterious, especially in the case of aged people and people having certain organic weaknesses. It is also alleged that the addition of fluorine to the water supply of Baltimore City is a calculated risk, and that there are many important aspects of such an adventure that have not been fully explored scientifically.

The preponderance of the evidence shows that fluorine ingested into the water supply of Baltimore City in the proportion or amount that is contemplated to be used is not toxic. The evidence also is that its effect on the health of the people of Baltimore City will not be deleterious even in the case of aged people or people having certain organic weaknesses. The evidence also shows that this project is not a calculated risk, and that it would be safe at this time as a result of the experiments that have already been made that the fluoridation of the water be immediately undertaken.

Dr. Williams testified that there is no substantial disagreement among competent scientists that the proposed fluoridation of Baltimore's water supply will have any effect at all of a deleterious nature on aging people or on people of any age group. It also appears from the report on Fluoridation of Water Supplies of the National Research Council, published November 29, 1951, and which report was offered in evidence, that:

"In the accumulated experience there is no evidence that the prolonged ingestion of drinking water with a mean concentration of fluorides below the level causing mottled enamel would have adverse physiological effects."

The chairman of the National Research Council Committee on this matter was Dr. Kennedy F. Maxcy, professor of epidemiology, Dr. A. McGehee Harvey, professor of medicine, and Dr. Abel Wolman, professor of sanitary engineering, were members of the committee. These gentlemen are at Johns Hopkins University. Among the other members were representatives of the United States Public Health Service, the University of Cincinnati College of Medicine and the University of Minnesota School of Public Health.

Dr. Williams further testified to the effect that any claims made that fluoride in the minute amounts to be added to the city's water supply, namely, one part per million, would be harmful to persons suffering from rheumatism and arthritis are not correct and cannot be scientifically confirmed. He further testified that no bodily defects attributable to waterborne fluorine below the eight parts per million level have ever been corroborated and that careful physical and dental examination of Newburgh (Newburgh, N. Y., study) children exposed to fluoridation of their water supply for 6 years disclosed no ill effects in the eyes, ears, bones, or teeth or vital organs, and further, that the Baltimore City Health Department has been studying the matter of the fluoridation of the city water supply since the first request to do so was received from Mayor D'Alesandro during the month of August 1950.

In November 1950, the Baltimore City Dental Society approved the fluoridation of the Baltimore City water supply. In November 1950, the Medical and Chirurgical Faculty of Maryland, which is the State medical society, placed itself on record as approving the fluoridation of the Baltimore City water supply. In 1951 the Maryland State Board of Health after due consideration approved the addition of fluoride to the city water supply of Hagerstown, and on December 20, 1951, approved the same procedure for Baltimore City.

Dr. Maurice E. Pincoffs, professor of medicine at the University of Maryland, who serves with the Commissioner of Health of Baltimore City, and who is a member of the Maryland State Board of Health, personally approved the fluoridation of the Baltimore City water supply, and he testified it would be a safe and important procedure for the partial prevention of dental decay in children.

There is testimony that in many Maryland communities there is naturally more than one part per million of fluoride in the normal drinking water, and that there is no evidence that there has been any harmful effect from long continued drinking of these natural waters in those various communities.

The purpose of adding fluoride to the city water supply, it has been testified, is to prevent needless tooth decay and suffering for thousands of Baltimore children in the future and for better adult health as the years go by. From the best available evidence the Commissioner of Health of Baltimore City testified that well over 95 percent of the soundest scientific thought in the United States is in favor of the view that there is no danger in adjusting a city water supply to one part per million of fluoride, and that further if this procedure is adopted that roughly two-thirds of all the dental decay in children as the years go by will be eliminated.

The testimony of Dr. Williams has been supported by many scientists, including medical and dental authorities not only from this State but from other States in the country, who have come here to testify as to their knowledge of the situation, and they all join in the approval of the plan. Dr. Williams, our own commissioner of health, is a very competent, capable, and honest public official. He has recommended this fluoridation of the water to the city council and the mayor. They have accepted this recommendation, and I see no reason why the court should not also do so. We must rely on scientists and doctors and dentists in technical affairs of this kind, and when we have an honest opinion given after a careful study I think it is entitled to great weight and should be adopted, so I find from the evidence that there is nothing in this proposed program that would be deleterious to the health of the people of Baltimore City, and I do not find from the evidence that the addition of fluorine to the water supply is a calculated risk of any kind.

The objection is also made by Harry C. Hoffman, one of the complainants, that the introduction of fluorine into the water supply would be an infringement of his constitutional rights, he being a Christian Scientist, alleging that the introduction of fluorine into the water supply of Baltimore city will compel him to violate one of the basic principles of his religion. A letter was introduced in evidence from the committee on publication of the Christian Science publications for Maryland in which it is stated that:

"Adherents of Christian Science regard medication and medical examination of all sorts as methods of indoctrination which operate to teach them to look to the physical body for health, whereas Christian Science teaches that health comes from God and true prayer makes that fact evident."

The argument is made that to require him to use city water after it has been ingested with fluoride, which it is claimed is a drug, would require him to submit to something which is against the tenets of his religion. However, the question as to whether this is medication is a debatable one, because in the opinion of Dr. Pincoffs he would not consider this as being medication, so that irrespective of the merits of the contention of Mr. Hoffman on broad constitutional lines, as a question of fact it is debatable as to whether or not the use by him of this water after fluoride has been put into it would be a violation by him of the tenets of his religion. It has been shown in the evidence that in other large cities the water has been treated exactly the same as it is proposed by the water engineer and the commissioner of health to treat the water in the city of Baltimore.

In the case of *Aryan* v. *Butler, Mayor of San Diego, California, et al.*, in the Superior Court for San Diego County, Calif., (No. 169974, decided April 3, 1952), the identical question involved here was presented to that court for decision by a member of the Christian Science faith who opposed the fluoridation of the water in San Diego. The court, in a memorandum opinion on motion for nonsuit, stated:

"Religious freedom embraces two concepts, freedom of belief and freedom to act. The first is absolute, but in the nature of things the second cannot be, in that all acts or conduct of our citizens must conform to all reasonable regulations adopted by the respective governmental agencies acting within the scope of their authority."

And in that connection, the court quoted from an opinion of the State Supreme Court of California. *Rescue Army* v. *Municipal Court* (28 Cal. 2d) 460, 470), as follows:

"There can be no question, therefore, that a person is free to hold whatever belief his conscience dictates, but when he translates his belief into action he may be required to conform to reasonable regulations which are applicable to all persons and are designed to accomplish a permissible objective."

It was held in the *Aryan* v. *Butler* case that no constitutional rights of any of the citizens of San Diego would be invaded or violated by the adoption of the proposed program.

In a case decided by the New York Court of Appeals (176 N. Y. 201), which was a prosecution for failure to provide medical attention for the accused's female minor child, the defense was made that it was contrary to the tenets of the religion of the accused to provide or call on medical services for relief from physical disease, but in that case the court of appeals held:

"We are aware that there are people who believe that the divine power may be invoked to heal the sick, and that faith is all that is required. There are others who believe that the Creator has supplied the earth, nature's storehouse, with everything that man may want for his support and maintenance, including the restoration and preservation of his health, and that he is left to work out his own salvation under fixed natural laws. There are still others who believe that Christianity and science go hand in hand, both proceeding from the Creator; that science is but the agent of the Almighty through which he accomplishes results, and that both science and divine power may be invoked together to restore diseased and suffering humanity. But, sitting as a court of law for the purpose of construing and determining the meaning of statutes, we have nothing to do with these variances in religious beliefs and have no power to determine which is correct. We place no limitations upon the power of the mind over the body, the power of faith to dispel disease, or the power of the Supreme Being to heal the sick. We merely declare the law as given us by the legislature. We have considered the legal proposition raised by the record, and we have found no error on the part of the trial court that called for a reversal."

In the court below in that case the accused was found guilty. The appellate division of the supreme court, reversed, and on appeal to the court of appeals the appellate division was reversed and the conviction was sustained.

We also find the following language in an opinion by Mr. Justice Field in the Supreme Court of the United States in the case of *Davis* v. *Beason* (133 U. S. 333):

"The term 'religion' has reference to one's views of his relations to his Creator, and to the obligations they impose of reverence for his being and character, and of obedience to his will. It is often confounded with the cultus or form of worship

of a particular sect, but is distinguishable from the latter. The first amendment to the Constitution, in declaring that Congress shall make no law respecting the establishment of religion, or forbidding the free exercise thereof, was intended to allow everyone under the jurisdiction of the United States to entertain such notions respecting his relations to his Maker and the duties they impose as may be approved by his judgment and conscience, and to exhibit his sentiments in such form of worship as he may think proper, not injurious to the equal rights of others, and to prohibit legislation for the support of any religious tenets, or the modes of worship of any sect. * * * There have been sects which denied as a part of their religious tenets that there should be any marriage tie, and advocated promiscuous intercourse of the sexes as prompted by the passions of its members. And history discloses the fact that the necessity of human sacrifices on special occasions has been a tenet of many sects. Should a sect of either of these kinds ever find its way into this country, swift punishment would follow the carrying into effect of its doctrines, and no heed would be given to the pretense that, as religious beliefs, their supporters could be protected in their exercise by the Constitution of the United States."

There is no question that under the Constitution of both the United States and the State of Maryland a person has a right to believe in any particular religion or faith that he cares to, but he does not have the absolute freedom to act in accordance with the tenets of any of those religions, but in his action he is bound to follow the laws duly enacted for the preservation of the health of citizens generally. He cannot object on religious grounds to laws enacted either by National, State, or city authorities. I find in this case that from the evidence none of the constitutional rights of the plaintiff, Hoffman, to freedom of religious belief would be invaded or violated by the adoption of the proposed program.

I might say also that we have several cases in Maryland, particularly the case of *Judefind* v. *State* (78 Md. 510), in which a man was indicted for violating the law prohibiting work on Sunday. The objection was made that members of a certain denomination do not observe Sunday as their Sabbath; that they observe as their Sabbath another day during the week; and they contended if the law was upheld, it would promote the Christian religion to the detriment of their religion, which allowed its members to work on Sunday. The court of appeals affirmed the conviction in that case and held that the believers in every religion were required to submit to the laws duly passed by the proper authorities. See also *Hiller* v. *State* (124 Md. 385), in which a law prohibiting playing baseball on Sunday was attacked on constitutional grounds.

The question has arisen as to the right of the city to adopt this program of fluoridation. It has been suggested that the city has the right to do this under subsection 11 of section 6 of the city charter, which authorizes the mayor and the City Council of Baltimore to provide for the preservation of the health of all persons within the city, to prevent the introduction of contagious diseases within the city and within 3 miles of the same upon land and within 15 miles thereof upon the navigable waters leading thereto, and to prevent and remove nuisances. And also under subsection 24, section 6, of the city charter, which is a delegation to the city of the police power in the city to the same etxent as the States has or could exercise said power within said limits, but it seems to me that subsection 37, section 6, of the city charter would be more applicable here. Under subsection 37 of section 6, the mayor and City Council of Baltimore is given the right and power to establish, maintain, regulate, and control a system of water supply, and to make charges for the consumption or use of said water. I am of the opinion that the power to promulgate and go through with this program would be sanctioned under that provision and subsection 11 of section 6, relating to health and nuisances.

I find nothing in the charter or in the ordinances that would authorize the water engineer or the commissioner of health to go through with a plan of this kind on their own initiative. It has been suggested that the water engineer would have the right to do that, but the power given him under the city charter and also under the code are limited and restricted. And it has been suggested that the water engineer would have authority under section 642 of the city charter, which provides for water supply improvement, Gunpowder River, but that section is a grant of power to the mayor and City Council of Baltimore, and is not a grant of power to any particuular official of the city.

Section 81 of the city charter creates the department of health, the head of which shall be the commissioner of health, who shall be appointed by the Mayor, and provides that: "He shall cause the ordinances for the preservation of the

health of the inhabitants of Baltimore City to be faithfully executed and strictly observed."

It goes on then to provide for his salary and other matters that have nothing to do with his powers. Under that section of the charter he is charged with the duty of enforcing the ordinances. In the city code, article 12, section 1:

"The commissioner of health is required from time to time to make observations of the several parts of the city and its environs which may be deemed the cause of disease, and in all cases where he may discover the existence of any agent the presence of which will prove dangerous to the health of the inhabitants, he shall cause any ordinances in existence for its correction to be enforced, or if there be no ordinance competent to the correction of the evil he shall make a full report of all of the attending circumstances to the mayor, accompanied by his opinion of the necessity of extraordinary or particular action."

Other provisions of that section indicate he acts in an advisory capacity, and that he is the watchdog for the city as to any matters that may be prevalent here that would cause the spread of disease, and it is his duty to take all action within his power to prevent disease, and in the event he has not the authority to take appropriate action then it is his duty to report it to the mayor so that an ordinance or resolution may be passed giving him the specific authority to act in any instances in which it should be necessary for him to do so. Of course there are many other instances where there are direct ordinances authorizing him to take action in certain cases.

It appears from the evidence that this authority of the water engineer and the commissioner of health to act in this case is derived from certain resolutions passed by the City Council of Baltimore, and the question then arises as to whether the City Council of Baltimore has the authority to act by way of resolution rather than by ordinance. There are several provisions in the Charter regarding the legislative duties and powers of the mayor and City Council of Baltimore under the charter.

Section 11, page 45, provides: "All ordinances or resolutions duly passed by the city council after being properly certified by the president of the city council as having been so passed, shall be delivered by the clerk to the mayor for his approval, and there shall be noted on said ordinance or resolution the date of said delivery."

Then it goes on to provide what should be done in the event that the mayor vetoes certain ordinances or resolutions, that they should be returned to the city council for further action.

Section 26 provides that "ordinances and resolutions of the city may be read in evidence from the printed volumes thereof published by its authority."

And section 28 of the city charter states: "Every legislative act of the city shall be by ordinance or resolution."

So I would take it from that provision in the city charter that a resolution not only can be but must be considered a legislative act of the city council, entitled to the same weight and respect as an ordinance.

In 62 C. J. S., page 786, Municipal Corporations, No. 411, it is stated that the terms "resolution" and "ordinance" have been used interchangeably, and that the term "resolution" has been held to be the equivalent of the term "ordinance" although a resolution generally is less solemn and formal than an ordinance, and further that a resolution passed with all formalities required for passing ordinances may operate as an ordinance regardless of the name by which it is called.

In Pennsylvania, in the case of *Kepner* v. *Commonwealth* (40 Pa. 124), the court held that a resolution is only a less solemn or less usual form of an ordinance, but that it is an ordinance still if it is in any way intended to regulate any of the affairs of a municipality.

The first resolution that was passed by the city council is Resolution No. 2469. That was introduced on November 13, 1950, and provides:

"Whereas the American Dental Association has approved the fluoridation of the water supply as a preventive of dental decay, particularly in children, therefore, be it resolved by the City Council of Baltimore that the Water Bureau and the Health Department of Baltimore City be and they are hereby requested to study the desirability of using fluoride chemicals in the water supply for the purpose of preventing the decay of children's teeth, and be it further resolved that if this study indicates that it is desirable to use fluoride chemicals steps be taken to do this at the earliest practicable date."

The next resolution that was introduced was Resolution No. 506 (introduced February 25, 1952), and it provides:

"Whereas there is disagreement among scientists as to the effect of water fluoridation on aging people, and whereas claims are made that fluoride is harmful to persons suffering from rheumatism and arthritis: Now, therefore, be it

Resolved, by the City Council of Baltimore, That the health committee request the commissioner of health and the water engineer to give to it whatever information is available on this treatment by fluoridation of city water supplies."

A further resolution, No. 533, was introduced on March 10, 1952, which provided that:

"Whereas there seems to be considerable uncertainty as to the wisdom of placing fluoride in the water supply, and

Whereas it seems desirable that further study should be given to this important subject in order to determine whether such chemical will be harmful to certain adults, and

Whereas while such fluoridation of water may be beneficial to young children, if the result is that adults are seriously harmed, and

Whereas a slight further delay until additional information may be obtained may not prove to be harmful: Now, therefore, be it

Resolved by the City Council of Baltimore, That the commissioner of health and the water engineer of Baltimore City be and they are hereby requested to delay the fluoridation of the city's water supply until additional information has been acquired in order to determine whether it is a wise step to take under all of the circumstances."

I understand from the testimony there was a public hearing held on this last ordinance, No. 533, in which persons testified in favor of the resolution, and of course the commissioner of health and others testified against the resolution, and the resolution was defeated, the evidence shows, by a vote of 17 to 4, and after this resolution was defeated Dr. Williams testified that he considered it then to be an ultimatum to him to proceed with the fluoridation of the water supply.

I might state that in accordance with resolution 506 the commissioner of health did make a study of the situation and favorably reported on this program to the mayor and City Council of Baltimore, as I have previously referred to in commenting on Dr. Williams' testimony in this case. So that because of the fact that this study indicated it would be desirable to use fluoride chemicals in accordance with resolution 2469, it seems to the court that there was ample authority to the commissioner of health and the water engineer to proceed with the program at the earliest practicable date, as provided in resolution 2469.

I find from the evidence and from a consideration of the city charter that this resolution which was duly passed by the council and approved by the mayor constitutes a legislative act of the city council, and the commissioner of health and the water engineer were in duty bound to comply with the provisions of the resolution. As a matter of fact, if they had not complied they would be subject to official censure for not acting in accordance with a resolution duly passed by the city council which declared it was the legislative intent of the city council, approved by the mayor, that this program of ingesting fluoride in the limited degree that it is proposed to do in the city water supply would be advantageous to the citizens of Baltimore City.

The argument is made that because the city water supply is supplied to certain localities in 3 counties bordering the city, one, Baltimore County, and the others, Anne Arundel County and Howard County, that it would be a deprivation of constitutional rights of the inhabitants of those 3 counties who are supplied with city water to be required to comply with legislation which was passed locally in Baltimore City. However, the plan has been approved by the State department of health, and there are no individuals in any of the localities in the counties involved in this program who have made any complaint at all, so that in the absence of a complaint from members of those localities I am of the opinion that argument is not sufficient in this case to prevent the city from proceeding with this program.

For the reasons stated above I will sign a decree dismissing the bill of complaint, the plaintiffs to pay the costs.

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MONDAY, MAY 31, 1954

SUPREME COURT OF LOUISIANA

No. 41717

Marke E. Chapman et al. v. *City of Shreveport*

Appeal from the First Judicial District Court, Parish of Caddo; the Honorable James U. Galloway, judge

HAWTHORNE, J.

This is an appeal by the city of Shreveport from a judgment enjoining it from fluoridating the municipal water supply. The city of Shreveport owns and operates its own municapal waterworks plant and other facilities for the sale and distribution of water for consumption and other uses of the inhabitants of that city. On October 16, 1953, the Shreveport City Council adopted a resolution authorizing the commissioner of public utilities to proceed with the advertising and calling for bids for the necessary equipment to fluoridate the city water supply in accordance with the best plans now available, and to receive these bids on or before October 27. The initial amount which the city proposes to spend in order to fluoridate the water supply is shown by the record to be in excess of $10,000 and the annual operating expense approximately $21,000.

The plaintiffs, as residents, citizens, taxpayers, and purchasers of water from the city, instituted this suit seeking a preliminary writ of injunction to prevent the proposed fluoridation of the public water supply and the expenditure of these public funds for such purpose. After trial in the lower court a preliminary injunction issued enjoining, restraining, and prohibiting the city of Shreveport from proceeding further to fluoridate the water supply of that city. From that judgment the city was granted a devolutive appeal to this court.

As we appreciate and understand the trial judge's written opinion, he granted a preliminary injunction in the instant case because in his opinion the charter of the city of Shreveport delegated no authority, express or implied, to the city to fluoridate its water supply, and the city did not have this power or right under its police power in the domain of public health. In the course of his reasons for judgment he recognized the well-settled principle of law that a municipal authority may take any action it may determine to be necessary and expedient under its police power in the domain of public health, provided the purpose and object of such action bears a reasonable relation to the public health and provided the means employed is not arbitrary, unreasonable, oppressive, or violative of the constitutional guaranties of the citizens. He concluded, however, that under the facts of the instant case the fluoridation of the city water supply bears no reasonable relation to the public health or that it is not a matter of public health but is strictly within the realm of private dental health and hygiene, in which each person should be free to choose his course for himself and those for whom he is responsible in the family relationship.

For the primary purpose of reducing tooth decay in children 12 years of age and under, the city of Shreveport proposes to add to the water furnished by it for the use and consumption of its citizens sodium fluoride in the proportion of 1 part per million. In furtherance of this purpose the resolution authorizing the calling for bids for the necessary equipment for fluoridation was adopted by the city council at the request of the council on dental health of the Fourth District Dental Association, the Shreveport Medical Society, and the City Board of Health of Shreveport, all of which advocated and approved the fluoridation of the city's water supply.

The relationship between the fluoride content of water supplies and dental caries has been the subject for some years of extensive scientific study, research, and experiments, and as a result of this research the court in the instant case has the benefit of facts ascertained, studies made, and opinions formed by many leading and prominent American dentists, physicians, surgeons, scientists, health, and dental associations and organizations whose statements have been filed in evidence, on the advisability of the fluoridation of water for human consumption. In sum, these statements disclose the following pertinent facts:

Dental caries, or tooth decay, is a pandemic disease, affecting most of our population, both adults and children. Flourides in varying proportions from less than 1 to 14 parts per million exist naturally in the water supplies of many regions of this country, and it has been demonstrated by studies made in many

sections throughout the United States that in communities where the water supply contains no fluoride tooth decay among children is approximately 3 times greater than it is among children living in communities where the water supply contains 1 part of fluoride per million parts of water or more. In these studies other factors of diet and other mineral components of water were considered, but it was found that only the fluoride content of the water consumed bore direct relationship to consistent protection from dental caries. This preventive effort of fluorides on tooth decay was found to be most efficient during the period when the dentine and enamel of the permanent dentition are being formed, which is the period from birth to about the 12th year, but it was shown that the protection afforded against dental caries in this formative period continues well into adult life, even into the middle thirties and forties. Studies were made of the effect on tooth decay when fluorides were artificially added to municipal water supplies, and it was found that the fluorides artificially added had the same preventive effect on caries as did the fluorides naturally existing in water.

By November 6, 1953, more than 840 communities, with a total population of 15,578,300, were using water supplies which had been artificially fluoridated in concentrations from 0.7 to 1.5 parts per million. By 1951, after 5 or 6 years of the fluoridation of the water supplies in certain cities, studies and examinations were made of the teeth of school children in these cities (and also, for comparison, of those of the children in cities where the water supply contained no fluorides), and the finding reported was that there has been a reduction of from 50 percent to 65 percent of decay in permanent teeth in children in the cities where fluorides had been added artificially to the water. As a result of these studies and experiments the United States Public Health Service, the National Institutes of Health, the American Dental Associaion, and numerous other national organizations recommended the fluoridation of municipal water supplies as a desirable and effective health measure.

The city of Shreveport proposes to use the recommended concentration of one part per million, and this concentration has not been reported to produce any adverse physiological effect. Vital statistics and reports of physicians from communities where water containing one part per million or over is consumed have shown uniformly no undesirable effects on birth or death rates or on invalids, elderly, or sick individuals, or any other persons.

The addition of fluorides to the water supply does not affect the color, odor, or taste of the water. The same kind of procedure which has long been used to feed chlorine and other chemicals into the water supply is used to introduce fluorides into the water, and there is no question that fluorides can thus be added to the water without danger of physical overfeeding or any mechanical breakdown which would produce a toxic effect.

The charter of the city of Shreveport, which was written under the authority of a 1948 amendment to article 14, section 37, of the Constitution and approved by a vote of the citizens of that community in 1950, confers upon that city the power to adopt such measures as are necessary in the opinion of the council to promote the general welfare of the inhabitants of that city in section 2.01 of the charter [sic]:

"GENERAL POWERS.—The city of Shreveport shall have and may exercise all the powers, rights, and privileges and immunities which are now or may hereafter be or could be conferred upon cities of its population class by the constitution and general laws of the State; all powers, rights, privileges, and immunities heretofore conferred on said city by any special act and not inconsistent with this plan of government; and all other powers pertinent to the government of the city the exercise of which is not expressly prohibited by the constitution of the State and which, in the opinion of the council, are necessary or desirable to *promote the general welfare of the city* and the safety, *health*, peace, good order, comfort, convenience, and morals of its inhabitants, as fully and completely as though such powers were specifically enumerated in this plan of government, and no enumeration or particular powers in this plan of government shall be taken to be exclusive but shall be held to be in addition to this general grant of power." [Italics ours.]

Accordingly, if fluoridation of the water supply bears any reasonable relation to the public health, it can be undertaken by the city under the express provisions of this section of its charter. Moreover, it is well settled that courts will not interfere with the legislative authority in the exercise of is police power unless it is plain and palpable that such action has no real or substantive relation

to the public health or safety or general welfare (*City of Shreveport* v. *Conrad*, 212 La. 737, 33 So. 2d 503; *City of Shreveport* v. *Bayse et al.*, 166 La. 689, 117 So. 775). There also exists a presumption that an ordinance adopted under the police power of the State is valid, and the burden of proving the contrary is on him who asserts the invalidity or nullity (*City of New Orleans* v. *Beck*, 139 La. 595, 71 So. 883; *Ward et al.* v. *Leche et al.*, 189 La. 113, 179 So. 52; *State* v. *Saia*, 212 La. 868, 33 So. 2d 665; *State* v. *Rones*, 223 La. 839, 67 So. 2d 99).

Although the immediate purpose of the proposed fluoridation is to retard and decrease the disease of dental caries in young children, the protection thus given will continue well into adult life. Not only will the proposed fluoridation retard and reduce this disease in the generation of children presently in Shreveport, but its effect will continue into their adult life, and consequently the proposed measure will ultimately be beneficial to all the residents of the city.

The health of the children of a community is of vital interest and of great importance to all the inhabitants of the community. Their health and physical well being is of great concern to all the people, and any legislation to retard or reduce disease in their midst cannot and should not be opposed on the ground that it has no reasonable relation to the general health and welfare. Children of today are adult citizens of tomorrow, upon whose shoulders will fall the responsibilities and duties of maintaining our Government and society. Any legislation, therefore, which will better equip them, by retarding or reducing the prevalence of disease, is of great importance and beneficial to all citizens. In our opinion, the legislation does bear a reasonable relation to public health.

The appellees insist, and the district judge concluded, that fluoridation of the water to prevent tooth decay is not a matter of public health, but a matter of private health and hygiene. The evidence in this record refutes overwhelmingly this conclusion. Dental caries is one of the most serious health problems in the city of Shreveport, and in the Nation as well. The fact that it is not a communicable disease and one that can cause an epidemic does not detract from its seriousness as affecting the health and well being of the community. The plan for fluoridation, therefore, bears a reasonable relation to the general welfare and the general health of the community, and is a valid exercise of the power conferred by section 2.01 of the charter if it is not arbitrary or unreasonable.

The appellees contend that fluoridation of the water supply is arbitrary and unreasonable because it may cause serious ill effects to the adult, aged, and ill; that it is arbitrary to fluoridate the water until clinical tests have proved that these serious effects will not result. The appellees have failed completely to prove that fluoridation would be harmful to the aged and ill.

There is expert opinion of respectable medical authority that fluorides added to water will have no more harmful effect than fluorides naturally appearing in water, and that in those places where fluorides naturally appear no ill effects have been experienced by the aged or ill of the population. In those places where tests have been conducted no ill effects have been shown. It cannot be said, then, that the city of Shreveport is acting arbitrarily from this point of view.

Appellees contend that it is arbitrary and unreasonable to compel a person to submit to the taking of preventive medicine except for the purpose of controlling the spread of contagious or infectious diseases. Their argument is not entirely appropriate to the instant case. In the first place, there is no direct compulsion on anyone to drink the water. The compulsion at most is an indirect one, but it cannot be questioned, of course, that the fluoridation is undertaken with the view that the citizens or a large majority of them will receive its benefits by drinking the public water. The witnesses from the dental profession considered that the addition of fluoride to the water was not medicating it in the generally accepted sense, but was adding to it one of the mineral properties found naturally in water in some sections of the country.

Appellees next argue that it is unreasonable to fluoridate the water when it will reduce the incidence of disease only among a limited class. A health measure is not necessarily arbitrary because it affects primarily one class. It may, even so, be in the interest of the public generally. Ultimately, of course, the fluoridation will benefit the whole population because the retarding of decay extends into adult life of the child who has had the benefit of water containing fluorides. It has long been recognized that a police measure is not objectionable because it does not extend to all classes. In *Zucht* v. *King et al.* (260 U. S. 174, 43 S. Ct. 24, 67 L. Ed. 194), it was said:

"* * * A long line of decisions by this court * * * (has) settled that in the exercise of the police power reasonable classification may be freely applied and that regulation is not violative of the equal protection clause merely because it is not all-embracing. * * *" (See also *West Coast Hotel Co.* v. *Parrish et al.*, 300 U. S. 379, 57 S. Ct. 578, 81 L. Ed. 703; *Sturges & Barr Manufacturing Co.* v. *Beauchamp*, 231 U. S. 320, 34 S. Ct. 60, 58 L. Ed. 245.)

There is no merit in appellees' argument that, if the city charter grants to the city council of Shreveport authority to fluoridate its water supply, such action to that extent is a violation of the 14th amendment of the United States Constitution. The 14th amendment does not deprive a State or its subdivisions of the right to preserve order or to protect the health of the people under its police power, and in the exercise of its power the legislative branch may interfere with and impair the individual liberty of the citizens in a manner and to an extent reasonably necessary for the public interest, and the courts will not interfere except where the measures invade fundamental rights or are arbitrary, oppressive, or unreasonable. This is not a proper case for judicial interference. (See Cooley on Constitutional Law (4th ed.), p. 289; 2 Cooley's Constitutional Limitations (8th ed.), pp. 1223 et seq.; *Jacobson* v. *Massachusetts*, 197 U. S. 11, 25 S. Ct. 358, 49 L. Ed. 643; *State* v. *McCormick*, 142 La. 580, 77 So. 288.)

For the reasons assigned, the judgment of the district court is reversed and set aside, and plaintiff's suit is dismissed at their costs.

Mr. GARVEY. I would like now to present to you, Mr. Chairman, Dr. E. Harold Gale.

STATEMENT OF DR. E. HAROLD GALE, ALBANY, N. Y., CHAIRMAN, COUNCIL ON LEGISLATION OF THE AMERICAN DENTAL ASSOCIATION

The CHAIRMAN. You may proceed, Dr. Gale.

Dr. GALE. Thank you.

I am E. Harold Gale, a practicing dentist of Albany, N. Y., and chairman of the Council on Legislation of the American Dental Association. I am here today to present the views of the association with respect to H. R. 2341, entitled: "A bill to protect the public health from the dangers of fluoridation of water." With me to present additional scientific testimony are Drs. H. Trendley Dean and J. Roy Doty, of Chicago, Ill. Mr. Dean is secretary of the association's council on dental research; Dr. Doty is secretary of its council on dental therapeutics. Also present is Mr. Francis J. Garvey, of Chicago, Ill., secretary of the council on legislation.

The American Dental Association is the official spokesman for more than 80 percent of the practicing dentists of this country. It speaks for the members of a profession which exists to study the teeth and supporting structures, the diseases and disabilities which affect them, and the methods by which such diseases and disabilities may be prevented, treated, and cured. The most prevalent of the dental diseases is known as dental caries, commonly referred to by laymen as tooth decay. This is likewise the most prevalent of all human diseases. It affects approximately 95 percent of the population of the United States. Children as young as 2 years are afflicted with it and, if untreated, the disease may cause pain and suffering in all age groups so long as the teeth remain in the mouth. It is a disease from which the individual neither dies nor recovers. Once a carious lesion occurs, the affected hard tissue can never regenerate itself. The lesion can only get worse until it is treated by the dentist. Last year the American people spent more than $1½ billion for dental care, much of which cost may be directly attributed to the treatment of dental decay

or to the replacement of teeth lost on account of decay. In addition, the Federal Government spent more than $100 million for dental service for members of the Armed Forces, for veterans, and for beneficiaries of the United States Public Health Service.

And may I interpolate right here that I am sure the American Dental Association can be safe in feeling that there is no hope for its members in a monetary gain when they are advocating a method which they feel has proven to reduce the incidence of decay which would have an adverse effect on their income. I think that answers the whole question of motivation as far as the dental association is concerned.

Manifestly, it is important healthwise and from an economic standpoint to encourage the development and use of effective preventive measures which will give the American people some relief from the pain and expense that this disease entails.

The most successful preventive procedure yet devised for the reduction of the incidence of tooth decay is the fluoridation of communal water supplies.

Community water fluoridation is merely the introduction into the water system of a community of a sufficient amount of fluoride-bearing material to produce in the water a fluoride ion content of approximately 1 part of fluoride ion to 1 million parts of water. The fluoride ion can be obtained from any number of chemicals. As you will hear from the waterworks engineers who will testify here, the process of adjusting the fluoride ion content of a public water supply is simple and sage. It is likewise relatively inexpensive both to install and to keep in operation. It has been estimated that the total cost of providing fluoridated water is only about 10 cents per year per person, about the cost of an ice cream cone. Others will tell you in detail of the beneficial results to be obtained in terms of decay reduction. Let me say only that the evidence of controlled studies reveals a reduction 60 to 65 percent of the amount of tooth decay that might otherwise be expected to occur were the water supplies lacking fluorine.

Extravagant statements have been made by the opponents of fluoridation. Some have said that it will cause cancer. In a letter to Dr. Aubrey Cox, of Wichita Falls, Tex., dated March 25, 1954, which I have attached hereto as appendix A so that it may be made part of the record, Dr. Charles S. Cameron, president of the American Cancer Society, said:

> The American Cancer Society does not consider fluorine or the common fluorine salts to be carcinogenic. Its position, therefore, with respect to water fluoridation for the purpose of dental caries prophylaxis, is that such treatment of public water supplies is without danger so far as cancer causation is concerned.

Some have said that this process involves the introduction of a poison into the water supply. As Dr. Doty and others will tell you, the recommended amount of 1 part of fluoride ion per 1 million parts of water is not toxic. We employ many things in our daily lives which if used in excessive quantities would be poisonous but which in the proper amounts have a beneficial effect, for example, chlorine in water, iodine in salt, vitamins in foods, enrichment additives in bread. Some have said that community water fluoridation would have an adverse effect upon the kidneys. This has been adequately refuted by eminent scientists highly trained in this field of physiology.

Other unfounded claims as to the dangers of fluoridation have failed to find the support of scientific evidence.

The title of H. R. 2341 makes an unwarranted assumption that the public is in danger from water fluoridation. It then proceeds in the text of the bill to assume that the Congress has powers of local regulation never given to it by the Constitution. While Congress conceivably has the power to prohibit the fluoridation of water in Federal territory and the power to prohibit Federal installations from receiving fluoridated water, no known principle of law has as yet conferred upon it the power to tell States and their local political subdivisions how to exercise the police power which is inherent in such States and municipalities. H. R. 2341 is, our attorneys advise us, clearly unconstitutional in its attempt to prohibit States and their political subdivisions from treating with fluorides municipal water supplies, or from making available to any person or institution, not an instrumentality of the Federal Government, water which has been fluoridated. I am sure that your committee is aware of this.

Prior to 1950 responsible agencies of the American Dental Association for many years watched the growth and development of the literature relating to fluoridation. In 1950, after years of careful and considered scientific evaluation, these agencies recommended to the house of delegates that the American Dental Association officially endorse the fluoridation of water supplies. The resolution adopted by the house of delegates is unequivocal and is attached to this statement for the record as appendix B. In addition to the American Dental Association, the dental societies of all 48 States and the District of Columbia, the American Medical Association, the United States Public Health Service, the American Academy of Pediatrics, the Association of State and Territorial Health Officers, the American Public Health Association, the American Public Welfare Association, the Commission on Chronic Illness, the National Research Council, the American Hospital Association, the American Nurses Association, the Inter-Association Committee on Health, the American Waterworks Association, the State and Territorial Dental Directors, the American Society of Dentistry for Children, the American College of Dentists, the dental section of the American Association for the Advancement of Science, and various State and county medical societies have approved the procedure. In short, every responsible national health agency in the country is in favor of the process.

For the record, I would like to file, as appendix C, the statement of the Interassociation Committee on Health, of which the American Dental Association is a member. I would like also to request that the chairman and other members of the committee file for the record the statements of organizations not here today which have been mailed to you on this subject. I hope also that you will include in the record the general correspondence from dentists which I am sure indicates in detail the nature of the problem of dental caries and the value of community water fluoridation in all parts of the country as seen through the eyes of the men responsible for the people's dental health, the practicing dentist of the communities in the United States. May I also urge that you print the records of these hearings so that those interested may have the benefits of the most up-to-date facts about fluoridation?

So that you may know the extent to which communities throughout the country have already accepted the fluoridation of public water supplies I am attaching to my statement as appendix D a list of the communities throughout the country which, according to information compiled by the association's council on dental health, are already adjusting their water supplies so that they contain the optimal amount of fluoride ion. You will notice that this list includes 944 communities in 43 States. The list is current as of May 14, 1954, just 2 weeks ago.

In conclusion, I thank you on behalf of the association for the opportunity to be present today to offer this testimony in support of a program of inestimable value to the people of the United States. The scientific aspects of the program will be discussed in detail by Drs. Dean and Doty, who will follow me. I hope that you will see fit to defeat this bill and by so doing to help in the improvement of the dental health of American citizens.

(The appendixes referred to follow:)

APPENDIX A

MARCH 25, 1954.

E. AUBREY COX, M. D.,
Committee Chairman, City of Wichita Falls,
Wichita Falls, Tex.

DEAR DR. COX: The American Cancer Society does not consider fluorine or the common fluorine salts to be carcinogenic. Its position, therefore, with respect to water fluoridation for the purpose of dental caries prophylaxis, is that such treatment of public water supplies is without danger so far as cancer causation is concerned.

The evidence is as follows:

(1) Laboratory:

(*a*) Sodium fluoride does not accelerate the growth of established Walker rat sarcoma in experimental animals.[1] This is a standard test tumor widely used in biological testing of growth stimulating or inhibiting compounds.

(*b*) Sodium fluoride appears to actually inhibit the development of spontaneous mammary carcinoma in mice.[2]

(*c*) Extensive toxicity studies of fluorine and its compounds, under numerous auspices, have failed to show that they have any cancer-causing or cancer-accelerating effects.

(*d*) The report of Alfred Taylor, Ph. D., of the biochemistry department of the University of Texas Medical Branch, that fluorine-containing water accelerated the appearance of breast tumors in C_3H mice (which are genetically highly susceptible to breast cancer) has been effectively countered by Dr. Edward Taylor,[3] who quoted the findings of two scientists of the National Cancer Institute after a review of Alfred Taylor's work: "Dr. Howard Andervont and I (Dr. H. T. Dean) have carefully evaluated the data with respect to the alleged relation of fluoride water to an accelerated rate in the development of mammary tumors and are of the opinion that the evidence adduced does not warrant any modification in the policy of recommending fluoridation of public water supplies for the partial control of dental caries."

(2) Epidemiologic:

(*a*) Swanberg[4] has shown that the death rate from cancer in Grand Rapids, Mich., was 206/2/100,000 in the year 1944; that fluoridation was begun in that

[1] Effect of Fluoride on Tumor Growth: Finerty, J. C., and Grace, J. D., Texas Reports on Biology and Medicine 10, 3 p. 501, 1952.

[2] Tannenbaum, A., and Silverstone, H. Effect of Low Environmental Temperature Dinitrophenol, or Sodium Fluoride on the Formation of Tumors in Mice, Cancer Research, 9, 7, p. 385, 1949.

[3] Taylor, E., Facts Relative to Tumors That Fluoridation is Harmful, Texas Dental Journal, p. 381, September 1951.

[4] Swanberg, Harold, Fluoridation of Water and Its Relation to Cancer, Mississippi Valley Medical Journal, 75: 125–128, September 1953.

city in January 1945; and that the death rates per hundred thousand of population for succeeding years were as follows:

1945	190.5	1949	187.6
1946	170.4	1950	189.2
1947	172.3	1951	183.1
1948	163.1	1952	185.3

(*b*) A comprehensive study by the United States Public Health Service was based on all cities in the United States having population of 10,000 and over whose water contained 0.7 part per million or more fluoride naturally present, on one hand, and 0.2 part per million or less, on the other. No significant difference between the age adjusted death rates from cancer, heart disease, and nephritis in the 28 high-fluoride cities and the rates in 60 low-fluoride cities could be found.

(*c*) Studies of breast cancer incidence rates in 13 Texas cities divided into 3 groups according to fluoride content of drinking water showed that the rate was lower in cities with high fluoride content than in cities with low content.[5]

I trust the above provides you with helpful data. Needless to say, I shall be glad to be of any further help I can.

Sincerely yours,

CHARLES S. CAMERON, M. D.

APPENDIX B

POLICY OF THE AMERICAN DENTAL ASSOCIATION

Whereas numerous studies have demonstrated a decreased incidence of dental decay associated with the presence of fluoride occurring naturally in drinking water; and

Whereas there is a rapidly accumulating body of data derived from direct studies of the artificial addition of fluoride to drinking water; and

Whereas these data provide convincing evidence of the safety of this procedure and of its benefits in terms of reduced incidence of dental caries: Therefore be it

Resolved, That in the interest of public health, the American Dental Association recommends the fluoridation of municipal water supplies when the fluoridation procedure is approved by the local dental society and utilized in accordance with the standards established by the responsible health authority; and be it further

Resolved, That the American Dental Association recommends the continuation of controlled studies of the benefits derived from the fluoridation of water supplies.

APPENDIX C

INTERASSOCIATION COMMITTEE ON HEALTH

1790 Broadway, New York 19, N. Y.

MEMBER ASSOCIATIONS

American Dental Association
American Hospital Association
American Medical Association
American Nurses Association
American Public Health Association
American Public Welfare Association

STATEMENT OF INTERASSOCIATION COMMITTEE ON HEALTH

The following statement was unanimously approved by the member organizations of the Interassociation Committee on Health—American Dental Association, American Hospital Association, American Medical Association, American Nurses Association, American Public Health Association, American Public Welfare Association:

[5] Same as footnote 3.

Since scientific reports published 35 years ago on the prevalence of endemic dental fluorosis in the United States, evidence has accumulated demonstrating the influence of small amounts of fluoride on dental health. Too much fluoride in drinking water results in a condition known as dental fluorosis, or mottled enamel; too little is associated with a high dental caries-experience rate. Between these two extremes, however, there is an optimum concentration of fluoride of about 1 part per million which effectively prevents a substantial amount of dental caries without causing dental fluorosis.

The problem of uncontrolled dental caries.—In the average community not benefiting from fluorides in its water supply, up to 50 percent of the 2-year-old children have 1 or more carious teeth, and the caries attack continues at a high rate to the extent that 95 percent of the population is affected. Dental caries results also in considerable cost for corrective dental services throughout an individual's lifeime.

Unimpeded by preventive measures, dental caries creates a health problem of considerable magnitude because of its high rate of occurrence and its numerous sequelae that result from neglect. Dental defects thus created are accumulating at a rate 4 to 5 times faster than can be corrected by presently available dental personnel. Sound public health practice, therefore, requires a reduction in the size of the problem by the use of effective preventive measures; especially those measures which are applicable on a widespread basis and benefit all persons in the community.

Epedemiological studies.—Epedemiological studies in many areas throughout the United States and abroad have shown that, within certain limits, a consistent inverse relationship exists between the fluoride content of drinking water and the amount of dental caries experience in children, particularly those using fluoride-bearing water continuously since birth. It has been found also that a concentration greater than about 1 part per million, provides little, if any, additional benefit. As the concentration increases beyond 2 parts per million, an increasing number of persons has fluorosed enamel that is easily detectable. Numerous investigations have shown that people reared in areas where drinking water contains approximately 1 part per million of fluorine have experienced only about one-third as much dental caries as those reared in areas where the water supplies are fluorine free. Evidence indicates also that the benefits are retained throughout life.

Studies on controlled fluoridation.—Studies begun in 1945 indicate that a similar degree of protection against dental caries is found in areas where the fluorine content has been adjusted to an optimum level as is found in areas where the same concentrations occur naturally. Statistical data show a significant reduction of dental caries in children and there is also evidence to suggest some protection to the teeth of persons who were young adults when fluoridation was undertaken. Continued observations will establish the ultimate degree of effectiveness in older age groups who used fluoridated water during childhood.

Studies on safety of fluoridation.—There is extensive literature on the pharmacology and toxicology of fluorides. The reports include laboratory investigations as well as studies conducted among people who have lived continuously in areas where the drinking water contains high concentrations of fluorides.

The most sensitive indication of an adverse physiological effect of fluoride ingestion is an enamel defect known as dental fluorosis. Accumulated experience provides no evidence that the prolonged ingestion of drinking water with a mean concentration of fluorides below the level causing dental fluorosis has any harmful effect.

A program involving the adjustment of the concentration of fluoride content in the municipal water supply is especially practical and safe because it is constantly subject to control by competent health authorities and does not require action on the part of individual citizens.

Cost and engineering aspects.—The cost of fluoridation is small considering its benefits. The cost of equipment has been found to range from several hundred dollars for a small town to about $15,000 for a city of 2,500,000 persons. Annual operating costs vary from 4 to 14 cents per person. These amounts are insignificant when compared with the costs of dental corrective services throughout a person's lifetime.

According to the American Waterworks Association, the addition of fluorides to a municipal water supply is feasible from an engineering standpoint. The mechanics of fluoridation are no more involved than those of water purification; moreover, the machinery and equipment commonly used in water plants is easily adapted. Through experience in towns and cities now fluoridating their

drinking water, standardized procedures have been developed which include appropriate supervision by official health authorities.

Need for wider adoption of fluoridation.—Although studies are still being conducted to determine the greatest amount of protection that may be realized from fluoridation, there is ample evidence to justify its use in any community where the water supply is deficient in fluorides and where the standards established by the State and local health authorities can be met.

There is evidence that the beneficial effects of fluoride-bearing water are obtained only after several years of continuous use. Every year that fluoridation is postponed, many thousands of children are deprived of the dental benefits which they might otherwise have obtained.

In order that this effective, inexpensive, and safe public-health measure may be adopted by additional communities as rapidly as possible, fluoridation must receive the continuing and active support of all professional, civic, and official organizations concerned with the health and welfare of the public.

National health organizations with policies favorable to fluoridation.—American Dental Association, American Medical Association, American Public Health Association, American Association of Public Health Dentists, United States Public Health Service, National Research Council, State and Territorial Health Officers Association, and State and Territorial Dental Health Directors.

Resolved, That the Interassociation Committee on Health urges fluoridation of the fluoride-deficient public water supplies of this country as rapidly as plans can be approved by the local medical, dental, and health department officials and the State departments of health.

(Signed) GEORGE BUGBEE,
Secretary.

APPENDIX D

AMERICAN DENTAL ASSOCIATION COUNCIL ON DENTAL HEALTH

STATUS OF FLUORIDATION IN THE UNITED STATES, ITS TERRITORIES AND POSSESSIONS, MAY 14, 1954 [1]

In 944 communities in 43 States, the District of Columbia, the Panama Canal Zone, and Puerto Rico 16,847,209 persons are drinking water with controlled amounts of fluoride added, according to reports received in the ADA central office.

In 1,152 communities in 44 States 3,570,021 persons are drinking water with a natural content of 0.7 to 2.0 parts per million of fluoride.[2]

In the United States, its Territories and possessions 20,417,330 persons are drinking water containing optimum amounts of fluoride.

Approximately 105 million persons in the United States (66 percent of the total United States population) are living in areas served by 16,750 public water supplies.[2]

In the United States 19.4 percent of the people served by public water supplies are drinking water containing optimum amounts of fluoride.

Controlled amounts of fluoride are being added to the water supplies of the following United States communities:

ALABAMA

Sheffield
Tuscaloosa:
- Holt
- Northport

ARKANSAS

Arkadelphia
Camden
Jonesboro: Nettleton
Lewisville

ARKANSAS—continued

Little Rock:
- Camac Village
- Guyer Springs
- North Little Rock

Searcy:
- Bald Knob
- Judsonia

Springdale
Walnut Ridge

[1] Inquiries for information on communities starting programs after May 14, 1954, should be addressed to the respective State health departments or the U. S. Public Health Service, Division of Dental Public Health, Washington 25, D. C.

[2] USPHS report, March 31, 1953, PHS, IV and V.

NOTE.—Communities indented are served by community above.

CALIFORNIA

Antioch
Healdsburg
Morgan Hill
Pleasanton
Rio Vista
San Diego
San Francisco (part, approximately 60 percent)

COLORADO

Craig
Grand Junction
Gunnison
Johnstown
Lafayette
Lewisville
Montrose
Palisade

CONNECTICUT

Cromwell
Mansfield State Training School and Hospital
Mystic:
- Stonington Borough
- Stonington Fire District
- West Mystic

New Britain: Berlin
Southbury Training School

DELAWARE

Newark

DISTRICT OF COLUMBIA

Washington: Andrews Field

FLORIDA

Clewiston
Gainesville
Miami:
- Coral Gables
- Hialeah
- Miami Beach
- Miami Shores Village
- Miami Springs
- South Miami
- West Miami

GEORGIA

Albany
Athens
De Kalb County:
- Avondale
- Brookhaven
- Chamblee
- Clarkston
- Decatur
- Doraville
- Druid Hills (section of Atlanta)
- Dunwoody
- Norcross
- Panthersville
- Redan
- Scottdale
- Tucker

Fort Valley
Gainesville

GEORGIA—continued

Monroe
Rome
Rossville [1]
Fort Oglethorpe [1]
Part of Catoosa County [1]
Part of Walker County [1]
Waycross

IDAHO

Bonner's Ferry
Coeur d'Alene
Council
Lewiston
Lewiston Orchards
McCall
Montpelier
Orofino
Preston
Salmon
Sandpoint:
- Kootenai
- Ponderay

ILLINOIS

Assumption
Carbondale: DeSoto
Carlyle: Beckemeyer
Casey
Chester
Dixon State Hospital
Evanston: Skokie (part)
Kenilworth
Lansing (supplied by Hammond, Ind.)
Lawrenceville:
- Bridgeport
- Sumner

LeRoy
Morton Grove
Newton
Normal
Normal (part: Soldier's and sailor's Children's Home)
Orion
Park Forest
Pleasant Hill
Sparta
Waukegan
Winnetka: Northfield
York Center

INDIANA

Batesville: Oldenburg
Bedford: Oolitic
Bloomfield
Columbus
Culver
Edgewood
Elkhart
Fort Wayne
Greensburg
Hammond:
- Black Oak
- Highland
- Munster

[1] Served by Chattanooga, Tenn.

INDIANA—continued

Huntingburg
Indianapolis:
  Beech Grove
  Ben Davis
  Mars Hill
  Mickleyville
  Southport
  Suburban Township
  Williams Creek
  Woodruff Place
Jasonville:
  Coalmont
  Hymera
Kokomo
Lafayette
Lyons
Madison
Marion
Martinsville
Michigan City
New Carlisle
Tell City
Valparaiso: Flint Lake Water Co.
Walkerton
Zionsville

IOWA

Audubon
Cedar Rapids
Clarinda
Creston
Davenport: Bettendorf
Dubuque
Eagle Grove
Fairfield
Harlan
Hartley
Indianola
Iowa City:
  Coralville
  University Heights
Manchester
Perry
Waukon

KANSAS

Arkansas City
Coffeyville: South Coffeyville
Colony
El Dorado
Fort Scott
Garnett
Hays
Horton
Iola:
  Gas City
  La Harpe
Junction City
Lawrence
Ottawa
Paola
Parsons
Seneca

KENTUCKY

Ashland
Burkesville
Calhoun
Central City
Cynthiana
Elizabethtown
Franklin
Glasgow
Greensburg
Hopkinsville
Lancaster
Louisville:
  Avondale
  Anchorage
  Audubon Park
  Belmor
  Beuchel
  Glenview
  Indian Hills
  Jeffersontown
  Kingsley
  Lakeland
  Lyndon
  Middletown
  Mockingbird
  Preston
  Seneca Vista
  Shively
  St. Matthews
  Strathmore Manor
  Strathmore Village
Martin
Mayfield
Maysville
Moorhead
Owensboro
Paintsville
Versailles

LOUISIANA

St. Martinville

MAINE

Norway

MARYLAND

Baltimore and county:
  Southern area:
    Arbutus
    Avalon
    Baltimore Highlands
    Crowdentown
    English Consul
    Halethorpe
    Lansdowne
    Monumental
    Relay
    Rosemont
    St. Denis
  Catonsville area:
    Catonsville
    Harristown
    Kenwood
    Oak Forest
    Paradise

MARYLAND—continued

Baltimore and county—Continued
- Pikesville area:
  - Colonial Park
  - Dumbarton
  - Fishtown
  - Garrison
  - Hebbville
  - Howardsville
  - Larchmont
  - Lochearn
  - Milford
  - Owings Mills
  - Pikesville
  - Ralston
  - Randallstown
  - Rockdale
  - Roslyn
  - Sudbrook Park
  - Villa Nova
  - Woodlawn
- Reisterstown area:
  - Delight
  - Glyndon
  - Reisterstown
- Towson area:
  - Anneslie
  - Bare Hills
  - Baynesville
  - Cockeysville
  - Idlewild
  - Lake
  - Lakeside
  - Lutherville
  - Oakleigh
  - Padonia
  - Pinehurst
  - Riderwood
  - Rockland
  - Rogers Forge
  - Ruxton
  - Sheppard
  - Stoneleigh
  - Texas
  - Timonium
  - Towson
  - Wiltondale
  - Woodbrook
- Parkville area:
  - Carney
  - Cub Hill
  - Fullerton
  - Kenwood Park
  - Lavender Hill
  - Linhigh
  - Necker
  - Overlea
  - Parkville
  - Perry Hall
  - Putty Hill
- Middle River area:
  - Aero Acres
  - Bengies
  - Glenmar Manor
  - Middle River
  - Stanbury
  - Victory Villa

MARYLAND—continued

Baltimore and county—Continued
- Essex area:
  - Chesaco Park
  - Essex
  - Golden Ring
  - Middleborough
  - Rosedale
  - Rossville
  - Stemmers Run
  - Walters
- Dundalk area:
  - Balnew
  - Dundalk
  - Fairtown
  - Harbor View
  - Iverness
  - St. Helena
  - Stab
  - Turner
- North Point area:
  - Edgemere
  - Lynch Point
  - Lodge Forest
  - North Point
  - Fitzell

Anne Arundel County:
- Arundel Village
- Brooklyn Park

Howard County:
- Elkridge
- Harwood
- West Elkridge

Bel Air

Frederick

Hagerstown:
- Cavetown
- Funkstown
- Halfway
- Roxbury Penal Farm
- Security
- Smithsburg
- Williamsport

Maryland Suburban Sanitary District:
- Alta Vista
- Ardwick
- Beltsville
- Berwyn
- Bethesda
- Bladensburg
- Brookmont
- Bradbury Boulevard
- Bradbury Heights
- Burnt Mills Village
- Cabin John
- Cabin John Park
- Capitol Heights
- Central Avenue
- Cheverly
- Chevy Chase
- Chillum
- College Park
- Edmondson
- Forest Glen
- Forest Heights

MARYLAND—continued

Maryland Suburban Sanitary District—Continued
- Forestville
- Four Corners
- Gaithersburg
- Garrett Park
- Glendale
- Glen Echo
- Glen Mont
- Greenbelt
- Hampshire Gardens
- Hillendale
- Hyattsville
- Kenilworth
- Kensington
- Kenwood
- Landover
- Lanham
- Laurel
- Lenox
- Montgomery Hills
- Mount Ranier
- Riggs Road
- Seat Pleasent
- Silver Hills
- Silver Spring
- Suitland
- Takoma Park
- Viers Mill
- Washington Grove
- West Gabe
- Wheaton
- Wood Acres

MASSACHUSETTS

- Athol
- Belchertown State School
- Beverly
- Concord (part)
- Danvers: Middleton
- Hingham: Hull
- Medway
- North Andover
- Salem
- Seekonk
- Sharon
- Shrewsbury
- Templeton
- Topsfield
- Wrentham State School

MICHIGAN

- Algonac: Pearl Beach
- Ann Arbor
- Battle Creek
- Bay City: Essexville
- Benton Harbor
- Buchanan
- Charlevoix
- Gladstone
- Grand Haven
- Grand Rapids:
  - Cascadia
  - East Leonard Heights
  - Urbondale

MICHIGAN—continued

- Grandville
- Grosse Pointe Farms: Grosse Pointe
- Hastings
- Highland Park
- Hillsdale
- Ishpeming
- Jackson
- Kalamazoo (part)
- Lake Odessa
- Ludington: Epworth Heights
- Mancelona
- Marquette
- Marysville
- Midland
- Monroe
- Mount Clemens: Harrison Township
- Muskegon
- Muskegon Heights: North Muskegon Heights
- Negaunee
- Saginaw
- St. Joseph
- South Haven
- Stambaugh: Stambaugh Township
- Traverse City
- Wyandotte

MINNESOTA

- Appleton
- Arlington
- Austin
- Benson
- Blue Earth
- Circle Pines
- Cloquet: Scanlon
- Crookston
- Ely
- Fairmont
- Faribault
- Fergus Falls
- Granite Falls
- Hallock
- Hutchinson
- International Falls: South International Falls
- Madison
- Mapleton
- Montevideo
- Mora
- Morris
- New York Mills
- Okabena
- Perham
- Red Lake Falls
- Rush City
- St. Paul:
  - Roseville
  - West St. Paul
- Staples
- Thief River Falls
- West Concord
- Winnebago

MISSISSIPPI

Columbus
Forest
Meridian

MONTANA

Bozeman
Chinook
Fort Belknap
Roundup

NEBRASKA

Beatrice
Fairbury
Nebraska City
Superior

NEW HAMPSHIRE

Concord

NEW JERSEY

City of Asbury Park
Borough of Bradley Beach
Borough of Deal
Borough of Eatontown
Borough of Fair Haven
Borough of Interlaken
Borough of Little Silver
City of Long Branch
Township of Middletown
Borough of Monmouth Beach
Morristown:
    Hanover Township
    Morris Plains
    Morris Township
Borough of Neptune City
Township of Neptune
Borough of New Shrewsbury
Township of Ocean
Borough of Oceanport
Rahway
Borough of Rumson
Borough of Sea Bright
Borough of Shrewsbury
Township of Shrewsbury
Borough of West Long Branch

NEW YORK

Amsterdam
Carle Place
Cobleskill
Elmira
Fulton
Gloversville
Highland
Hoosick Falls
Larchmont
Levittown (Levittown-Island Trees Water District)
Newburgh
New Rochelle:
    Ardsley
    Bronxville
    Eastchester
    North Pelham
    Pelham
    Pelham Manor
    Tuckahoe

NEW YORK—continued

Olean
Penn Yan
Plattsburgh
Poughkeepsie
Rochester
Schenectady
Westfield

NORTH CAROLINA

Albemarle
Charlotte:
    Morris Field
    Pineville
Concord
Dunn
Fayetteville
Greensboro
    Hamilton Lakes
    Guilford College
Hickory
High Point
Lenoir
Lexington
Roanoke Rapids
Rockingham
Rocky Mount
Salisbury
Southern Pines
Sylva
Winston-Salem

NORTH DAKOTA

Dickinson
Fargo
Mandan
Northwood
Riverdale
Williston

OHIO

Avon Lake
Canfield
Canton: Meyers Lake
Chesapeake (supplied by Huntington, W. Va.)
Elyria
Glendale
Hamilton
Ironton: Coal Grove
Jackson
Lisbon
McDonald
Martins Ferry:
    Bridgeport
    Brookside
Medina
Niles
Oberlin
Portsmouth
Westerville
Wyoming
Youngstown: Suburban Township

OKLAHOMA

Altus
Ardmore
Bartlesville
Clinton
Guthrie
Mangum
Nowata
Tulsa

OREGON

Astoria
Corvallis: Philomath
Florence
Forest Grove
Gearhart
Mill City
Pendleton
Salem Heights Water District

PANAMA CANAL ZONE

PENNSYLVANIA

Brookville
Easton:
- Bethlehem Township (part)
- Forks Township (part)
- Glendon Borough
- Palmer Borough
- West Easton Borough
- Williams Township (part)
- Wilson Borough

Ebensburg
Ford City: Manorville
Mansfield
Millersburg
Natrona:
- Harrison (part)
- East Deer Township (part)

New Castle:
- Hickory Township
- Neshannock Township
- Shenago Township
- South New Castle Borough
- Union Township

Pittsburgh:
- Blawnox
- Bruceton
- Homestead
- Moon Run
- Mount Troy
- O'Hara Township
- Reserve Township
- Robinson Township
- Snowden Township
- Woodville
- Ridgway
- Uniontown
- Wilkinsburg:
  - Braddock (part)
  - Braddock Township (part)
  - Chalfant
  - Churchill
  - East McKeesport
  - East Pittsburgh
  - Edgewood
  - Forest Hills

PENNSYLVANIA—continued

Pittsburgh—Continued
- Wilkinsburg—Continued
  - North Braddock
  - North Versailles Township
  - Patton
  - Penn Township
  - Pitcairn
  - Rankin
  - Swissvale
  - Trafford
  - Turtle Creek
  - Williams Township
  - Wilmerding
  - Also supplies 13 wards in Pittsburgh

PUERTO RICO

Guaynabo:
- Bayamon
- Catano
- San Juan

Trujillo Alto:
- Carolina
- Loiza
- Rio Grande
- Rio Piedras

RHODE ISLAND

Bristol:
- Barrington
- Warren

Newport: Middletown
Providence:
- Cranston
- Johnston
- North Providence
- Smithfield
- Warwick

SOUTH CAROLINA

Cheraw
Fort Mill
Greenville (Greater Greenville):
- Donaldson Air Force Base
- Fountain Inn
- Marietta
- Mauldin
- Renfrew
- Rural
- Simpsonville
- Slater
- Travelers Rest

Hartsville
Lancaster
Ninety Six
Orangeburg
Rock Hill

SOUTH DAKOTA

Aberdeen
Mobridge
Vermillion
Watertown

TENNESSEE

Bristol
Brownsville
Chattanooga:
East Brainerd
East Ridge
Hixon
Lookout Mountain
Signal Mountain
Cleveland
Cookeville
Cowan
Crossville
Germantown
Lawrenceburg
Milan
Nashville:
Belle Meade
Woodbine
Oak Ridge
Paris
Tiptonville
Union City
Winchester

TEXAS

Breckenridge
Corpus Christi
Gonzales
Graham
Iowa Park
Marshall
Paris
Port Arthur:
Groves
Lakeview
Sabine Pass
Sweetwater
Temple
Wellington
Wichita Falls

VERMONT

Burlington

VIRGINIA

Alexandria
Arlington County (supplied by Washington, D. C.)
Blackstone
Charlottesville
Danville
Falls Church (supplied by Washington, D. C.)
Fredericksburg
Fries: Blair Addition
Lynchburg:
Madison Heights
State Colony
Norfolk:
Port Lock
South Norfolk
Virginia Beach
Portsmouth:
Churchland
Craddock
Alexandria Park
Deep Creek

VIRGINIA—continued

Simonsdale
Suffolk
West Norfolk
Richmond: Lakeside
Winchester

WASHINGTON

Clarkston
Norwood Village

WEST VIRGINIA

Bridgeport
Clarksburg
Fairmont:
Grant Town
Rivesville
Huntington: Barboursville
Logan
Martinsburg
Matewan
Parkersburg
Pineville
Ripley
Sistersville
Weirton
Wheeling:
Benwood
Bethlehem
Tridelphia
Valley Grove
Williamson
Williamstown

WISCONSIN

Alma
Amery
Antigo
Appleton
Belle Heights
Bucholz
Whispering Pines
Argyle
Ashland
Athens
Baraboo
Lyons
Beaver Dam
Belleville
Beloit
Berlin
Black River Falls
Blair
Bloomer
Boscobel
Cambridge
Cedar Grove
Columbus
Cottage Grove
Crestwood
Cuba City
Darlington
DeForest
Delavan

WISCONSIN—continued

Dodgeville
Eagle River
Eau Claire
Edgar
Edgerton
Elkhorn
Evansville
Fond du Lac
Fort Atkinson
Galesville
Gillette
Hartford
Hayward
Horicon
Janesville
Lake Geneva
Lodi
Madison
  Blooming Grove Sanitary District
  Burke
  Garden Homes
  Lakeview Sanitary District
  Maple Bluff
  Monona
  Oak Ridge Sanitary District
  Shorewood Hills
Marinette
Marshfield
Mayville
Mazomanie
Menasha
Menomonee Falls
Middleton
  Middleton Sanitary District
Milton
  Milton Junction
Milwaukee
  Fox Point
  Shorewood
  Wauwatosa (partial)
  West Allis
  West Milwaukee
  Whitefish Bay
Mineral Point
Mosinee
Mount Horeb
Mukwonago
Neenah
New Glarus

WISCONSIN—continued

New Holstein
Oconomowoc
Oregon
Orfordville
Osceola
Oshkosh
Pewaukee
Phillips
Platteville
Portage
Port Washington
Poynette
Prairie du Sac
Racine
  Colonial Heights Sanitary District
  North Bay Sanitary District
  South Lawn
Reedsburg
Rhinelander
Rice Lake
Richland Center
Ripon
Sheboygan
  Sheboygan Falls
Shell Lake
Soldiers Grove
South Milwaukee
Sparta
Spooner
Spring Green
Stoughton
Sun Prairie
Tomahawk
Trempealeau
Watertown
Waunakee
Waupun
Wausau
West Bend
  Barton
Westby
Weyauwega
Whitehall
Wisconsin Rapids
Wonewoc

WYOMING

Laramie
Sinclair
Thermopolis

The CHAIRMAN. Are there any questions by members of the committee?

Mr. HESELTON. Doctor, there is one point I would like to mention: In appendix C, reference is made to the action taken by the Inter-Association on Health, and I notice among the members of that association is the American Medical Association.

Dr. GALE. Yes.

Mr. HESELTON. There has been some statement of approving the matter in principle by the American Medical Association. This statement, I notice, that you filed was dated May 5, 1954. Does that

represent the present position of the American Medical Association's approval of the association committee on health?

Dr. GALE. I do not think I quite understood the question.

Mr. HESELTON. I will try to rephrase it. You have made, by reference, a statement concerning the American Medical Association.

Dr. GALE. Yes.

Mr. HESELTON. As being a member of the Inter-Association Committee on Health.

Dr. GALE. Yes.

Mr. HESELTON. My recollection is that there has been some testimony that the American Medical Association has taken a position that was one of qualified approval and this statement is dated May 6, 1954. I would be interested to know whether this supersedes the previous statement that has been submitted to the committee.

Dr. GALE. May I read to you, sir, a letter here signed by George F. Lull, who is secretary of the association, to Dr. H. L. Bloom——

Mr. HESELTON. Secretary of which association?

Dr. GALE (reading):

I have your letter of April 6, written by your assistant—

and so forth.

This statement is as follows:

I can say that the American Medical Association endorses the fluoridation of public water supply. George Smith and many others have twisted the words around because of the fact that in one action of the house of delegates, the word "principle" was used.

No matter what words were used, the endorsement is that public water supply should be fluoridated in order to prevent dental caries in children.

Does that answer your question?

Mr. HESELTON. The secretary of the association? Was that of the American Medical Association?

Dr. GALE. I think it was.

Mr. GARVEY. Secretary and general manager of the American Medical Association.

Mr. HESELTON. What date was that?

Dr. GALE. That was April 14, 1954.

Mr. GARVEY. May I say also, Mr. Heselton, that Dr. Lull has filed a statement with the chairman of this committee on behalf of the American Medical Association to the same effect, and asked that it be incorporated in the record.

The CHAIRMAN. It is already a part of the record.

Mr. WILLIAMS. Mr. Chairman.

The CHAIRMAN. Mr. Williams.

Mr. WILLIAMS. Doctor, I believe you represent the American Dental Association?

Dr. GALE. That is correct.

Mr. WILLIAMS. And the American Dental Association has taken a position in favor of—or certainly not objecting to—fluoridation?

Dr. GALE. In favor of.

Mr. WILLIAMS. In taking that position, Doctor, does the American Dental Association have anything in mind other than a sincere desire to promote dental health?

Dr. GALE. No, sir; I firmly believe that the American Dental Association in recognition of its responsibility to the general public in the

matter of health—they have always been as much interested in preventing dental diseases as they have been in curing dental diseases.

Mr. WILLIAMS. Doctor, the effects of fluoridation are known, I presume?

Dr. GALE. I can say from my own experience, and I may be encroaching perhaps on someone who can better express this later, but from my own experience in the new experiment in Newberg which has been referred to before, I know that if it is to be termed an experiment, has been conducted by the full health team, and it has not been conducted by the dental department, but by the full health team, where they were constantly X-raying, blood tests taken, and medical tests taken, as the work went on.

So that we are quite sure of the safety of the application of the use of the fluorides in water.

Mr. WILLIAMS. Has any tangible evidence ever been presented to you on which to base a finding to the effect that fluoridation is harmful?

Dr. GALE. No. Harmful? No.

Mr. WILLIAMS. On the other hand, I presume that affirmative evidence has been presented as to its benefits?

Dr. GALE. I would say that when the State health department personally supervised—with a full medical team, because they are interested not in the matter of dental caries alone, but in the entire health picture of the State—that they would be the last people in the world to allow a thing of that kind to continue if there was even the smallest evidence there was any physical danger attached.

Mr. WILLIAMS. Doctor, not being a scientist or a doctor, I am wondering why there are such diverse opinions among the men in the medical association concerning the effect of fluoridation.

Dr. GALE. I might say, so are we, and I do not mean to be dodging the question, sir.

Mr. WILLIAMS. I understand. That is a very good answer, I think.

I asked you the question as to what motive the American Dental Association might have in supporting fluoridation, other than to promote the dental health of the people of America, and your answer was "None.'

On the other hand, do you know of any ulterior motive of any kind, which might be behind the opposition to the fluoridation of water, other than a sincere desire on their part to protect the dental and physical health of the people?

Dr. GALE. I cannot say that I do know of any.

Mr. WILLIAMS. Then it is your opinion, that it is just a simple, but open, difference of opinion among the men in medicine?

Dr. GALE. And, let us hope, an honest difference of opinion.

Mr. WILLIAMS. That is all, Mr. Chairman.

The CHAIRMAN. Any further questions?

Mr. Hale?

Mr. HALE. Doctor, there was some testimony here this morning. if I understood it correctly—and I am not sure that I did, but if I did understand it, it was that the fluoridation benefits to children's teeth is for a period up to 7, or say 8, years of age, and after that, that it does more harm than good. Would you comment on that?

Dr. GALE. I think I would prefer, perhaps, to have one of the gentlemen who follow me make a comment on that. I might say,

though, that if you will remember, that statement was made by a gentleman who admitted that he was not of the dental profession. And it is a well recognized fact in dentistry that the ages of perhaps 10 to 14 and 15 are the ages when there is the highest incidence of dental caries under any conditions, because that is the time the child is developing most rapidly, and the teeth are called upon to supply so many needs of the body, so it is not surprising to us that there might be an increase in the instance of dental caries in that age. The differentiation being whether or not, under the fluoride program, it was still, to some degree, a control, whereas, without control, it would have existed to a much greater extent.

Mr. HALE. Just so that we may have it in the record, can you tell the committee without too much technical language, what dental caries is? What causes it, and what it does to our general health?

Dr. GALE. Well, I could give you—I will attempt to give you in layman language, the most commonly accepted theory of dental decay, that being——

Mr. HALE. Caries means decay?

Dr. GALE. Dental caries is dental decay, yes; they are synonymous terms. The most accepted theory is, of course, that the enamel is broken down by the acids in the mouth, formed perhaps in the initial stages of digestion with sugars and carbohydrates and by the bacteria invasion of the dentine of the teeth; and in the days when I went to school, unless they have changed it, they used to say that bacteria thrives on the albuminous constituents of the dentine, and hence you have the breaking down of the teeth.

Now, may I say this off the record, please?

(Discussion off the record.)

Mr. HALE. Anyway, the tooth decay sets in, or may set in, at least almost as soon as the infant acquires teeth; is that correct?

Dr. GALE. That is true. In fact, many children between two and two and a half have mild incidence of decay.

Mr. HALE. And then when the permanent teeth come, they have to start all over again?

Mr. GALE. Many times.

Mr. HALE. I believe that is all, Mr. Chairman.

Mr. WILLIAMS. Mr. Chairman.

The CHAIRMAN. Mr. Williams.

Mr. WILLIAMS. Doctor, you heard the testimony a few moments ago of Dr. Ginn. I believe you were in the room, were you not?

Dr. GALE. Yes.

Mr. WILLIAMS. Dr. Ginn, if I recall correctly, presented as an exhibit to his testimony, two sets of teeth: one set allegedly taken from a continuous user of fluorinated water, and the other set from a person who had not used drinking water with fluorine in it. I believe it was his intention in presenting the two sets of teeth to show that in one set of teeth, the teeth were in bad shape, and I believe that the other was in good shape. One set was sound and the other set was unsound, and he attributed the condition of the bad set of teeth to fluorination. I believe he challenged any member of the dental profession to contradict his statement to the effect, I believe, that the teeth which had been subjected to fluorination were solvent in some kind of acid and that the others were not. Would you care to comment on that?

Dr. GALE. I would much prefer, if it meets with your permission, to defer that question to one of the members of the profession who will follow me, Dr. Doty, or Dr. Dean, either one of whom, I am sure, can answer the question to your satisfaction.

Mr. WILLIAMS. I would like to hear some qualified witness elaborate on that subject.

Dr. GALE. Yes.

Mr. WILLIAMS. And to explain to the committee the significance of such testimony.

Dr. GALE. I think it is insignificant, but I would prefer to have the gentlemen who follow me cover it.

Mr. WILLIAMS. Unfortunately, we are not expert in this particular field, so we have to rely upon those whom we know to be expert.

Dr. GALE. Yes.

The CHAIRMAN. Any further questions? If not, we thank you.

Dr. GALE. Thank you.

STATEMENT OF DR. H. TRENDLEY DEAN, SECRETARY, COUNCIL ON DENTAL RESEARCH OF THE AMERICAN DENTAL ASSOCIATION

Mr. GARVEY. Mr. Chairman, the next witness will be Dr. Trendley Dean, secretary of the Council on Dental Research and Therapeutics of the American Dental Association.

The CHAIRMAN. Dr. Dean, you may proceed.

Dr. DEAN. Mr. Chairman and members of the committee, it is a pleasure, Mr. Chairman, to appear before this committee and discuss the relation of fluorine to dental health. I am H. Trendley Dean, secretary of the Council on Dental Research of the American Dental Association, Chicago, Ill. I graduated in dentistry from the St. Louis University in 1916. For more than 20 years my efforts have been devoted to the study of fluorine and dental health. A list of 46 of my papers dealing with this subject as recorded in the periodical literature is attached to this statement. A listing of 8 chapters contributed to 6 different books is contained in my curriculum vitae which is likewise attached.

The disclosure of the fluorine-dental caries relationship resulted from field epidemiological studies. For the benefit of the committee, may I very briefly define the modern concept of epidemiology. Through long common usage the term "epidemiology" came to mean the study of epidemics, or of diseases characterized by a sharply increased case incidence within a relatively short period of time. Today this concept no longer obtains. The past generation has been the horizon of epidemiology markedly expanded, particularly in the field of environmental factors affecting man. Epidemiology has, in fact, become medical ecology, and this method of study is being applied to the study of any mass disease or condition, the cause of which may be known, suspected, assumed or unknown.[1] [2]

For those unfamiliar with epidemiological procedures, one point might well be stressed: A population of individuals constitutes the

[1] Gordon, J. E.: IV. The Twentieth Century—Yesterday, Today, and Tomorrow (1920—), in The History of American Epidemiology, Top, F. H., ed., C. V. Mosby Co., St. Louis, 1952.

[2] Clark, E. G.: An Epidemiologic Approach to Preventive Medicine, in, Textbood of Preventive Medicine, Leavell, H. R., and Clark, E. G., McGraw-Hill Book Co., Inc., New York, Toronto, London, 1953.

unit of investigation. This is in distinct contrast to the clinical method in which the individual, rather than a population of individuals, is the basis of study. In an epidemiological inquiry, all observations are related to the group; in a clinical study, the observations remain related to the particular individuals under study.

Epidemiological observations are particularly concerned with operations of nature and man's reactions to the nature around him. Naturally man's environment is an ensemble of extreme complexity; hence, it is essential that we utilize all the scientific disciplines pertinent to an explanation of the phenomenon under observation. When marked differences are observed in health and disease, one naturally asks what different factors, causal or otherwise, may be operating in these several populations. Thoroughgoing studies of certain of these phenomena in nature have provided some of the outstanding control measures in preventive medicine, that is, cowpox virus as a preventive for smallpox, citrus fruits for scurvy, iodine for endemic goiter, quinine for malaria, and fluorides for dental caries control.

Mottled enamel, or the dental manifestation of an excessive intake of fluorides during the calcification period of the teeth, has been known for at least a half century. The first report in the United States literature was that of Eager [3] in 1901, describing an endemic area in Italy. The classical studies of McKay and Black [4] in this country appeared in 1916. Other studies on mottled enamel included the extensive work by Argentinian, North African, and Japanese workers in the 1920's, while in the early 1930's reports of studies in England, Italy, and China appeared.

In 1931, 3 independent investigators, 2 in the United States and 1 in north Africa, reported that excessive amounts of fluoride in the drinking water was the causative factor. Subsequent research demonstrated the quantitative relationship between the fluoride concentration of the drinking water, and the prevalence and severity of endemic dental fluorosis, as mottled enamel was subsequently termed. It was also demonstrated quantitatively that under average water consumption and climatological conditions in the United States a concentration of 1.0 part per million in the drinking water was not associated with the development of mottled enamel.[5]

The relation of fluorides to dental caries has been intensively studied for more than 20 years.[6] The earlier mottled enamel studies were concerned with the dental effects resulting from the use of domestic waters containing too much fluorides. In these early studies one fact kept continuously recurring, the repeated observation that the amount of dental caries (decay) was lower in endemic mottled enamel areas than in areas not affected. The universality of this observation suggested that nature was showing the way to a new control measure. Not only was this phenomenon observed in the United States but in the Argentine, in England, and in Japan as well.

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[3] Eager, J. M.: Denti di Chiaie (Chiaie Teeth). Public Health Report 16: 2576–2577, November 1, 1901.

[4] McKay, F. S.: (in collaboration with Black, G. V.): An Investigation of Mottled Teeth: an endemic developmental imperfection of the enamel of the teeth, heretofore unknown in the literature of dentistry. Dental Cosmos, 58: 477–484 (*a*) May; 627–644 (*b*) June; 781–792 (*c*) July; 894–904 (*d*) August 1916.

[5] Fluorine and Dental Health: F. R. Moulton, editor, publication No. 19, American Association for the Advancement of Science, Science Press, Lancaster, Pa., 1942.

[6] Dental Caries and Fluorine: F. R. Moulton, editor, American Association for the Advancement of Science, Science Press, Lancaster, Pa., 1946.

Accordingly a comprehensive epidemiological study was planned and carried out by the dental research group of the National Institutes of Health. These studies culminated in an examination of 7,257 continuous resident white children of 21 cities with differing amounts of fluorides in their community water supplies. These studies established two facts of basic importance:[7]

(*a*) Children 12–14 years of age who have continually, since birth, used a domestic water with an optimal fluoride concentration have, in general, only one-third of the amount of dental caries as do the same age groups who used fluoride-free domestic waters; and

(*b*) that this markedly lessened amount of dental caries follows the use of a communal water supply containing as little as 1.0 parts per million of fluoride—a fluoride concentration sufficiently low to obviate the development of dental fluorosis or mottled enamel.

Marked inhibition of dental caries has likewise been observed in adult populations. The frequently made statement that fluoridation is applicable only to children is not true in the light of more recent studies. Russell and Elvove[8] made a detailed epidemiological study of adults with a history of continuous residence in Boulder, Colo., where the domestic water supply was fluoride-free, and in Colorado Springs, Colo., where for the past 60 years the public water supply contained 2.5 parts per million of fluoride. This study showed that adults of Colorado Springs in the 35–39 and the 40–44-year-old-groups had only one-fourth the amount of dental decay and one-fourth the tooth loss as the same age groups at Boulder.

The data from innumerable epidemiological studies were critically analyzed. Much supporting evidence came from the laboratory; experimental dental caries in animals was similarly inhibited when fluorides were added to a caries-producing diet. Obviously, the next step would be an attempt to simulate this purely natural phenomenon by adjusting the chemical composition (fluoride) of a public water supply to conform to that where nature itself has provided such outstanding evidence of protection against the attacks of dental caries. Water fluoridation, or the treatment process of adjusting the fluoride concentration of a public water supply to a level optimal for dental health, began in 1945. Today water fluoridation is an acceptable public-health procedure;[9] as of May 1, 1954, fluoridation is being practiced in 944 communities of the United States with a population of nearly 17 million persons.[10] It should not be overlooked that in addition there are about 3,500,000 other people in this country who reside in areas where the public water supply carries fluorides in optimal or higher amounts.

The three cities where fluoridation has been under study since 1945 are Grand Rapilds, Mich., Newburgh, N. Y., and Brantford, Ontario

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[7] Dean, H. T., Arnold, F. A., Jr., and Elvove, E.: Domestic Water and Dental Caries. V. Additional studies of the relation of fluoride domestic waters to dental caries experience in 4,425 white children, age 12 to 14 years, of 13 cities in 4 States. Public Health Report, 57: 1155–1179 (August 7), 1942.

[8] Russell, A. L., and Elvove, E.: Domestic Water and Dental Caries, VII. A study of the fluoride-dental caries relationship in an adult population. Public Health Reports, 66: 1389–1401, October 26, 1951.

[9] Report of the ad hoc Committee on Fluoridation of Water Supplies. Publication 214, Division of Medical Sciences, National Academy of Sciences-National Research Council. Washington, D. C., 1952.

[10] Information Bulletin, American Dental Association, Chicago, Ill., May 1954.

(Canada). A recent report [11] shows that at Grand Rapids there has been a reduction in the amount of dental caries in the 6, 7, 8, and 9 year old children of the order of 70.8, 52.5, 49.2, and 48.1 percent, respectively. In the case of Brantford, the reduction observed in the same age groups was 59.4, 69.5, 51.5, and 46.2 percent, respectively. The 6, 7, 8, and 9 year old groups at Newburgh shows a reduction of 69.4, 67.8, 40.4, and 51.4 percent, respectively. The number of children examined in each city was ample for statistical analysis. Such consistency in these and other independent studies supplies direct evidence that dental decay and much of its sequelae can be brought under a large measure of control through fluoridation of the public water supply.

From time to time the question is raised: Fluoridation is mass medication. Such is not the case, and any assumption that it is reveals a lack of knowledge of the carious process and its associated pathology. Medication implies the application of a medicinal substance or agent for the treatment and cure of a disease—the application of remedies. Fluoridation is not a treatment or cure for dental caries. Dental caries is a nonhealing lesion; dental enamel once injured never repairs itself, with or without medication. Fluorine simply prevents the decay from developing. In short, fluoridation of public water supplies simulates a purely natural phenomenon—a prophylaxis which nature has clearly outlined in those communities that are fortunate enough to have about one part per million of fluoride naturally present in the public water supply, such as, for example, Denver, Colo., Aurora, Ill., and many others.

The conclusions contained in a recent article [12] summarize my present thinking on this subject. May I quote it verbatim:

CONCLUSIONS

1. In relation to dental health, public water supplies may now be divided into three groups:

(*a*) Those carrying naturally the optimal concentration of fluoride, or those waters deficient in fluoride which have been adjusted to the optimal by fluoridation.

(*b*) Those carrying an excessive amount of fluorides, requiring the removal of the excess in order to protect the community against endemic dental fluorosis (mottled enamel); or

(*c*) Those deficient in fluoride, to which should be added fluoride to bring their concentration up to the level optimal for dental caries control.

2. Dentistry now has a proven partial control measure for the most ubiquitous of diseases, dental caries. Fluoridation is a cheap, effective dental-caries preventive heralding marked changes in the dental practice of the future. Such changes may be as revolutionary as those which have occurred in medicine during the past generation with the advent of immunization and the antibiotics. With dental caries brought under a large measure of control, the dentistry of tomorrow may well be drawn more and more into the biological aspects of oral medicine and its consequent effect, the development of preventive dentistry.

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[11] The Problem of Providing Optimum Fluoride Intake for Prevention of Dental Caries. A report of the committee on dental health of the Food and Nutrition Board prepared by the Subcommittee on Optimum Fluoride Levels. Division of Biology and Agriculture, National Research Council, Publication 294, November 1953, Washington, D. C.

[12] Dean, H. T.: Fluorine in the Control of Dental Caries—Some aspects of the epidemiology of the fluorine-dental caries relationship. International Dent. J., 4: 311–337, March 1954.

H. TRENDLEY DEAN, MARCH 1954

Specialism listing: Epidemiology
Other specialisms: Flourine and dental health
Vincent's infection
Research Administration
Radium dial painter's poisoning
Mandibular fractures

Dean, Dr. H(enry) Trendley; epidemiology; born Winstanley Park (now part of East St. Louis), St. Clair County, Ill., August 25, 1893; son William Ware and Rosalie Harriet (Trendley) D.; ed. St. Louis Acad. (St. L. Univ.) 08–12; D. D. S., St. Louis Univ., 1916; Officers School, U. S. Public Health Service, 1931; m. Ruth Martha McEvoy, September 14, 1921; children—Ruth Celestine, Dorothea Virginia (Mrs. D. R. McKiernan), Mary Harriet. Licensed to practice in Missouri and Illinois. Private practice, Wood River, Ill., 1916 and 1920 (Pres., Alton, Ill., Dental Society, 1920; Post Commander, Wood River Post, American Legion, 1920). Acting Assistant Dental Surgeon U. S. Public Health Service, 21–22; U. S. Veterans' Bureau, 23; Acting Asst. Dental Surgeon, USPHS, 24–25; passed asst. dental surgeon, 25–30, dental surgeon, 30–42, senior dental surgeon, 42–45, dental director, 45–53; Dental Director, retired 1953; *Secretary, Council on Dental Research, American Dental Assn., 1953–*; served at U. S. Marine Hospital, St. Louis, Mo., Fort William Henry Harrison, Montana, U. S. Marine Hosps., Boston, Mass.; New York, New York; San Francisco, Calif.; and Nat. Inst. of Health, Washington, D. C., and Bethesda, Md.

On duty National Institute of Health 1931–53 serving in division infectious diseases, division physiology, and later Experimental Biology and Medicine Institute. Director, National Institute of Dental Research, 1948–53. Fellow, A. A. A. S. (Council, 1953–); Am. Coll. Dent. (Chairman, Wash. Sect. 41; assoc. ed. Jour. Am. Coll. Dent, 46–48; Comm. research, 50–); Am. Pub. Health Assn. (comm. on research and standards, 49–52); mem., Am. Dent. Assn. (secy., comm. dental health surv. 33–35; military affairs, 37; mem. economics comm. 38–48; research commission, 39–48); International Assn. Dental Research, pres. 44; trustee, 48–); Washington Acad. Sciences, Assn. Military Surg. (Pres. 1937, Assn. Mil. Dental Surg. of U. S.); Am. Epidemiol. Soc., National Research Council (mem. comm. div. med. sci., 43–48; Ad Hoc Committee on Fluoridation of water supplies, 1951, NRC, Division of Medical Sciences); Federation Dentaire Internationale (v. p. from U. S. 1947–52; co-opted member, Scient. Comm. 1953–); Amer. Assn. Dental Editors, 46–48; Amer. Water Works Assn., comm. policy re fluoridation of public water supplies, 49–; Professorial Lecturer, Epidemiology, Univ. Chicago, 1953–; Delta Sigma Delta (life mem.); Omicron Kappa Upsilon (hon.). U. S. Army, 1917–19, Ft. Riley, Kans.; Camp Logan, Tex.; Ft. Sill, Okla.; 1st lt. and capt. DRC.; 20th U. S. Cavalry (78th F A.) and 3d F. A., A. E. F. in France, World War I; detailed (as Col. USPHS on temp. duty) to O. M. G. (P. H. Br.) Hdqrs., U. S. Forces, European Theater (Main), U. S. Zone Germany, World War II, 45–46.

Lecturer, U. S. Navy Dental School, 1943–48; Lecturer, U. S. Army Dental School, 1948–49. Gorgas Medal and Award (Assn. Mil. Surg. 1949); John M. Goodell Prize (AWWA, 1950); Jarvie Fellowship Medal (Dent. Soc. State of N. Y. 1951); Lasker Award (APHA, 1952); Georgetown Univ., Sch. Dent. Award of Merit, 1953; Distinguished Service Award, Am. Assn. Pub. Health Dentists, 1953; Hon. Mem., Sect. Odont., Royal Soc. Med. (London) 1952; Holme Lect., Univ. London Hospital Medical College (1952); 1st Panamerican Dental Congress (Buenos Aires, 1952); XI Internal. Dent. Cong. (London, 1952). Hon. Mem. Finnish Dental Society (Helsinki, 1952). Army Commendation Ribbon, Victory medal w/one clasp (World War I), American Defense Ribbon, American Theater Ribbon, Victory Ribbon (World War II). Mem. Mass. Soc., Sons Am. Rev.; Nat. Assn. of the 6th Inf. Div.; St. Louis University Alumni Federation. Club: Army and Navy Country. Author of more than 50 articles in scientific, pub. health, dental, med., and engineering journals dealing largely with epidemiological studies.

Books: Chapters in Gordon's Dental Science and Dental Art. Chronic Endemic Dental Fluorosis (mottled enamel); Monlton's AAAS Monographs Fluorine and Dental Health (1. Geographical Distribution of Endemic Dental Fluorosis (mottled enamel); 2. The Investigation of Physiological Effects by the Epidemiological Method); and Dental Caries and Fluorine (1. Some General

Epidemiological Considerations. 2. Epidemiological Studies in the United States); Levine et al., Advances in Pediatrics, vol. 2 (Role of Flourine in Prevention and Treatment of Dental Caries); Carr's Dentistry, An Agency of Health Service (N. Y. Acad. Med.), (Problems for Investigation and Current Progress); Pelton and Wisan's Dentistry in Public Health (Fluorine: Water-borne Fluorides and Dental Health).

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PUBLICATIONS OF H. TRENDLEY DEAN, D. D. S., RELATING TO FLUORINE AND DENTAL HEALTH AS RECORDED IN THE PERIODICAL LITERATURE

(Chapters in Books Are Shown on pp. 3–4 of Curriculum Vitae.)

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The CHAIRMAN. Any questions, gentlemen?

Mr. HESELTON. Dr. Dean, I take it from a brief examination of a list of various articles and books which you have published that the matter of fluoridation has been under active study for some years?

Dr. DEAN. Yes.

Mr. HESELTON. Can you advise us over what period of time that would be?

Dr. DEAN. There were certain early studies, beginning about 1905 or 1907, where there were studies, and in particular, the Colorado studies, but it was not until about 1931, that the causative effects of fluorine were discovered and then there was a wider expansion of the study in this country, also down in the Argentine Republic and in North Africa.

The first study, of course, during the first 3 or 4 years after 1931, was to try to determine what was a safe amount in a water supply so as not to produce objectionable mottling of the enamel, and from that basis, they further expanded into developing up the quantitative means of measuring dental caries as an index in the population in order to see whether more of this would occur.

In the last 10 years, the studies have been very extensive. Dr. Heyroth, who will testify later, will be able to give you the total number of references now dealing with fluoride which they recently computed down at the University of Cincinnati.

Mr. HESELTON. Then you made reference to communities whose water supply contained fluorides and mentioned 2 or 3. I notice in appendix D of the statement by Dr. Gale there is a listing of communities under the heading, "Control amounts of fluorides are being added to the water supplies of the following United States Communities."

Do you have any additional list to cover the communities that have fluorides in their water supply naturally?

Dr. DEAN. I can obtain one for the committee without any difficulty. A few years ago the University of Chicago conducted a study of that nature. The one I did 10 or 15 years ago is probably quite obsolete now, but I can get for you this newer report in which they covered all the States and cities in the United States that contained fluoride in various amounts.

Mr. HESELTON. I think that would be helpful for the committee. Will you do that, then?

Dr. DEAN. Yes, sir.

(The information, when received, will be placed in the committee files.)

The CHAIRMAN. Mr. Hale?

Mr. HALE. Doctor, I wanted to ask one question with reference to this mottling of the enamel which is produced by an excess of fluorine. Does that affect the teeth in any other manner? That is to say, does the mottling cause decay or anything of that kind?

Dr. DEAN. No, they are relatively free of decay. Of course, they have some, but it is low. But it is very objectionable from an esthetic standpoint. They represent a defective structure.

In the lower amounts, around 2 parts to a million, it is largely a lack of calcification of the outer surface, a dull chalky white. If you get up around 4 or 5 parts to a million, this lack of calcification also gets into hypoplasia, a sort of defective structure, and you start picking up a brown stain, which you can see in places like Amarillo and Lubbock, Tex.

Mr. HALE. I cannot hear you, Doctor.

Dr. DEAN. Getting to places like Amarillo or Lubbock or all of west Texas, where they have these fluorides, they have the moderate or severe amount characterized by brown stain, which is quite disfiguring. There is nothing you can do for it. It is a permanent disfigurement in the enamel. That is due to quite high fluorides which we think should be removed from the water.

Mr. HALE. Which are natural?

Dr. DEAN. They are natural and they should be removed. They are too high.

Mr. HALE. If I understand the testimony correctly, one part of fluoride to one million is safe?

Dr. DEAN. It is quite a safe level. You may have a few white flecks on them, largely in the back teeth, in a small percentage. To all practicable purposes it is a very, very safe, satisfactory amount.

Mr. HALE. And that is enough to be effective?

Dr. DEAN. Quite effective in reducing dental caries.

I would like to modify that statement like I did in this talk: When we get into an area like Arizona, New Mexico, southeast Georgia or some of the Southeastern States, we have the long, hot summers and the high mean average temperatures. Probably we would consider six-tenths of a part to one million about the optimal amount, because they have increased their intake of water and, of course, increased their fluorine a little bit. In other words, in southeast Georgia, around six-tenths is just about what you see with about 1 around Chicago, 1 or 1.2.

Mr. HALE. Where do you pass the danger line? Is five parts per million too much?

Dr. DEAN. I would say a lot lower than that. I would say 1½ should not be exceeded. At 1.8 you start picking up a little too much of this white opacity.

Mr. HALE. You should never get beyond 1.8?

Dr. DEAN. I would not go that high. I think one is ample.

Mr. HALE. One is ample?

Dr. DEAN. One is pretty close to the right amount under average conditions.

Mr. HALE. If you go above one you run into a risk factor?

Dr. DEAN. Maybe it is possible if you get into a place like North Dakota or South Dakota or eastern Montana it might go up to 1.4 or 1.5 which might work like 1 around Chicago, or six-tenths in the Southeast States. Dr. Galagan of the Public Health Service has recently done extensive work on the influence of mean average temperatures and climatological factors on this condition.

Mr. HALE. You would readily agree when artificial fluoridation is done it has to be done with extreme care and accuracy?

Dr. DEAN. There is no doubt about that.

Mr. HALE. And if it is not done with extreme care and accuracy then the result may be very unfortunate?

Dr. DEAN. Fortunately, they have extremely accurate machinery for water treatment. Mr. Harris, who is coming down from Grand Rapids, can explain that to you in much better detail. He has been doing that for 9 years. I think he collects 5 or 6 samplings a day.

I think this machine is accurate to about one-tenth of a part a million.

Mr. HALE. When you have a water supply which comes from a lake I can understand how you can be extremely accurate in putting the fluorine in, but as in the case of many cities, when you have water supply coming from a river, how do you manage the fluoridation?

Dr. DEAN. It depends on the fluorine content of the river and whether there is a seasonal change. If you have three- or four-tenths part a million in a river you obviously would only have to add about five- or six-tenths to bring it up to a part per million.

Mr. HALE. I believe that Washington gets it water supply from the Potomac River, does it not?

Dr. DEAN. That is correct, sir.

Mr. HALE. I do no know where the intake is, but I assume it is upstream. If you inject fluorine into the Potomac, where do you put it in?

Dr. DEAN. At the water plant, with the treatment.

Mr. HALE. At the plant itself?

Dr. DEAN. Right at the plant where you treat the water.

Mr. HALE. I should think you would have an element of danger there, because the stream flow would fluctuate. I should not think the percentage of fluorine to water would be constant.

Dr. DEAN. You are quite right. Obviously you would have to run chemical analyses of a river so as to know what amount you should put in. You have about one-tenth of a part to a million, or zero, in the Potomac, we will say, for Washington.

At St. Louis you have about three-tenths in the Missouri. Half of St. Louis city is on the St. Louis County side. You would not have to go over about seven-tenths there.

I think you have four- or five-tenths in Omaha, on the same Missouri. Again, you would have to adjust the amount you put in based upon your chemical analysis.

Mr. HALE. What is the mechanical process of putting fluoride in? Do they inject it with a syringe?

Dr. DEAN. I think probably what we ought to do is wait until tomorrow, when Mr. Harris is here. He is the chief chemist at Grand Rapids and he has been doing it now for between 9 and 9½ years every day. He can describe in detail just how it is done and what is the degree of accuracy.

Mr. HALE. That is all, Mr. Chairman.

The CHAIRMAN. Does Washington have a reservoir or take direct from the river?

Dr. DEAN. I think they have reservoirs.

The CHAIRMAN. I assume that is where it would be put in.

Dr. DEAN. There is a representative of the Washington Water Department here, who will probably speak tomorrow. He can give you the detail of the water distribution system here much better than I could.

Mr. HESELTON. Turning to the alleged dangerous aspects of swallowing fluorine, I assume that it is true, as has been testified, that fluorides in certain forms would be dangerous to anyone. Would you agree with that?

Dr. DEAN. It all depends on the amount.

Mr. HESELTON. Yes.

Dr. DEAN. So many things in life are dangerous when you have an excessive amount.

Mr. HESELTON. You say the first effort to place fluoride in water in this country was in 1945?

Dr. DEAN. 1945; Grand Rapids was January 1945. Newburgh was May 1945. Brantford, Ontario, was June, 1945. Those are the first three.

Mr. HESELTON. Do you know or have you ever heard of any case of damage or disease attributable to taking water from those communities?

Dr. DEAN. I have heard of none, sir.

Mr. HESELTON. I would suppose, without having any medical or dental training whatsoever, that the tongue or the lining of the mouth is a very sensitive area, which would be injured by any substance which was not wholesome. Would that not be true?

Dr. DEAN. If it were in an excessive amount. We are talking about an amount that is very, very low.

We have large sections of our country using many times what we are talking about. You can take the area of West Texas; start up at Dalhart on the Oklahoma line, go through Amarillo and Lubbock, down to Big Springs, an area the size of Pennsylvania, and I do not know of any water supply that does not have 2 to 6 parts per million. The whole population has mottled enamel, but it is certainly fluoride water.

Mr. HESELTON. What I have in mind is this: If in those two communities for that period of time no damage appears—I am thinking as a layman—in the mouths, tongues, throats, or stomachs of those who have been drinking that water daily for around 9 years, it is some indication. Probably it should show up in that period of time.

Dr. DEAN. That is in the fluoridation areas, where you have one part per million. In the fluoridation cities where they have one part per million, I have heard of none. That is the question you are asking.

Mr. HESELTON. That is all.

The CHAIRMAN. Any further questions?

Mr. WARBURTON. Dr. Dean, I think you appreciate that none of us on the committee are chemists or basically trained in this matter we are discussing today. Therefore, we have to rely on our own ability to reconcile what we hear from both sides.

This morning Dr. Spira indicated that as a result of his examinations and experiments which he conducted earlier he discovered that there were fluorine indications in those persons with whom he was experimenting and further drew the conclusion that the signs and symptoms that he discovered indicated that these fluorine indications were derived from sources other than the drinking water.

In your experience, does the average human being actually receive fluorine through sources other than drinking water, that is, through the intaking of food and so forth in his daily life?

Mr. DEAN. Practically all the food we eat has some fluorine in it. Studies conducted by Dr. Armstrong at Minnesota, who will be down tomorrow, show, I think, around two or three-tenths of a milligram per day in the average diet you eat. He could give you some particular information on that.

Mr. WARBURTON. I see. Am I correct in saying, then, that we can start out with this factor that as an ordinary matter all of us take in fluorine in some unknown quantity in our daily life?

Dr. DEAN. Two or three milligrams a day, I think.

Mr. WARBURTON. In some areas of the country there are also water supplies used normally which will also contain fluorine?

Dr. DEAN. Yes, sir.

Mr. WARBURTON. You further suggest, then, in this fluoridation program, the injection of a constant amount, or to treat the water supply with a constant amount of fluorine?

Dr. DEAN. No. No. I said: Bring the concentration up to the optimal level. You may have a fractional part in the water, and you bring it up to one. If you have three-tenths, you will only need seven-tenths. If you have zero you will need one. If you vary from three- to five-tenths on a seasonal switch you would adjust again, so that you have no more than one in the water supply.

Mr. WARBURTON. It is your conclusion, then, that the optimal amount for the particular locality, based upon that which is already normally in the water supply from natural sources, is still sufficient to cause no danger, regardless of the amount that we take in normally from sources other than the water supply?

Dr. DEAN. The amount we have been taking in as food is probably so low as to be relatively of no value in protecting against dental caries.

Mr. WARBURTON. Let me ask you this the other way around. It it of such a low value, together with that which is naturally contained in the water supply and that which is added to the water supply, that no danger is created?

Dr. DEAN. No. You would see it in a place like Denver or Aurora, where they have it naturally, and they still eat the same type of food that we do.

Mr. WARBURTON. In your experiments, which you indicate here on page 4 of your report, you indicate that the studies of the National Institutes of Health culminated in an examination of 7,257 continuous resident white children of 21 cities, and you drew from those studies 2 conclusions with respect to the beneficial effect that water treated naturally or otherwise with fluoride concentration has. In the tests

were there any groups which were incorporated in the whole test who received no benefit?

Dr. DEAN. These studies had to do with cities where they contained the fluoride in various amounts, either under natural conditions or where it was relatively absent.

Mr. WARBURTON. I see.

Dr. DEAN. This was the evidence upon which we took the next step. We went through the 7,200 studying this thing quantitatively in detail under natural conditions.

Mr. WARBURTON. The point I am trying to get at is this—and I am possibly not getting to it because of my lack of knowledge on this subject—in any particular city under the conditions under which these studies were made did you have, for example, 500 children whom you had examined and who showed a lack of dental caries which could be attributable to the fact that they had been drinking over whatever the required period of time was water containing naturally fluorides; and were there any children, for example, in that same city in the same age group who had received no benefit, although they had been there for the same length of time and had been taking the same kind of water?

Dr. DEAN. It is quite probable you would have a few. Any time you take a large group for any biological study of people, 300 or 400, there may be some who will still have a fair amount of caries; but if you stated mathematically the average for the group you would find it is probably down 50 or 60 or 65 percent. We studied that on the basis of what you call the multiple attack rates, in which the number of children who had no caries, the number who had one tooth, the number who had two teeth, and so forth up to 20 were involved. You could see quite a marked difference.

You could have the case of a sporadic type, where you may have had 12 or 15 carious teeth, but it was very unusual; hwere as on the other side you have quite a distribution.

Mr. WARBURTON. Let me ask you this: In a study of this type when you are selecting the group of children to examine and study over some extended period of time do you just take a group of children selected at random?

Dr. DEAN. I will tell you how we did these 21 cities. We took all 12-, 13-, and 14-year-old white children in every seventh, eighth, and ninth grade in every public school in the community.

Mr. WARBURTON. So it was comprehensive across the whole community within those particular limits?

Dr. DEAN. Yes.

Mr. WARBURTON. Thank you.

The CHAIRMAN. Any further questions?

Mr. WILLIAMS. Dr. Dean, have you read the testimony of Dr. Exner?

Dr. DEAN. Yes, sir.

The CHAIRMAN. Any further questions of Dr. Dean? We thank you, Doctor.

Dr. DEAN. Thank you, sir.

The CHAIRMAN. May I inquire as to the length of time that Dr. Doty would take to deliver his testimony?

Mr. GARVEY. About 15 minutes is prepared for, Mr. Chairman, absent questions.

The CHAIRMAN. Does Dr. Doty intend to be here tomorrow, or is he leaving tonight?

Mr. GARVEY. He can be here tomorrow.

The CHAIRMAN. I would appreciate it, then, if we would be able to adjourn, because we have some people waiting to see members of the committee on committee business. We would like to talk to them. They have been waiting since an hour ago.

The committee will adjourn until 10 o'clock tomorrow, when the first witness will be Dr. J. Roy Doty.

(Thereupon, at 4:40 p. m., Wednesday, May 26, 1954, an adjournment was taken until 10 a. m., Thursday, May 27, 1954.)

FLUORIDATION OF WATER

THURSDAY, MAY 27, 1954

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D. C.

The committee met, at 10 a. m., pursuant to adjournment, in Room 1334, New House Office Building, Hon. Robert Hale presiding.

Mr. HALE. The committee will be in order. We will resume this morning, hearings on H. R. 2341, to prohibit water fluoridation, and the first witness is Dr. J. Roy Doty of Chicago, Ill. Dr. Doty.

STATEMENT OF DR. J. ROY DOTY, SECRETARY, COUNCIL ON DENTAL THERAPEUTICS, AMERICAN DENTAL ASSOCIATION, CHICAGO, ILL.

Dr. DOTY. Mr. Chairman and members of the committee. May I say for the American Dental Association, it wishes to express its appreciation to the Public Health Service representatives for allowing the American Dental Association's representatives to appear first.

I am J. Roy Doty of Chicago, Ill., secretary of the council on dental therapeutics of the American Dental Association, in which capacity I have for several years studied and evaluated the scientific literature relating to fluoridation of community water supplies as a method of diminishing the incidence of dental caries. I hold the degree of bachelor of science from Monmouth College, Monmouth, Ill., and doctor of philosophy from the University of Illinois. From 1928 to 1930 I taught inorganic and analytical chemistry at Monmouth College, from 1933—after obtaining my doctor's degree—to 1935 I did research on the effect on animals of the ingestion of spray residues on plant products; and from 1935 to 1943 I was first instructor and subsequently assistant professor of physiology at Louisiana State University School of Medicine at New Orleans. Since 1943 I have been associated with the council on dental therapeutics of the American Dental Association.

My purpose in appearing before you today is to discuss some of the biochemical aspects of community water fluoridation programs.

The fluoridation of drinking water is a simple, natural, and straightforward procedure for insuring to millions of children the opportunity to obtain the optimum amount of an important trace element in nutrition. During the period of tooth development it is essential that children receive adequate but limited amounts of fluoride in order that their teeth may become more resistant to those forces which lead to tooth decay and its resultant potential for further ill health.

Nearly 4 million United States residents receive water which for many years has carried adequate or even excessive amounts of fluoride as an incidental constituent. An additional 17 million Americans currently receive water whose fluoride content is adjusted to a desirable level. Fluoride is a trace element in nutrition and water is a natural source of this nutritional element. There are compelling reasons why this dietary fluoride should be available in drinking water. The individual's consumption of water is more uniform than the consumption of any other one food. Water is, in fact, the only vehicle for dietary fluoride whose adequacy and safety has been demonstrated by extensive experience. Other considerations of safety, convenience, and economy contribute to the same conclusion. Hence, only confusion and possible hazard could result from the use for this purpose of other foods containing added fluoride.

At this point I wish to emphasize certain fundamental chemical concepts which bear upon the subject of fluoridation. Some opponents of purposeful fluoridation have alleged that the fluoride which is added in an incidental manner to water when it passes through certain fluoride-bearing strata of the earth is somehow different from the fluoride which is added at a water treatment plant. To the chemist, the following concepts are axiomatic:

1. All fluorine is natural fluorine.

2. To determine if fluoride is present in water, whether there naturally or purposefully added, the chemical procedures employed seek in either case to determine the fluoride ion concentration.

The chemist, therefore, is led to the inescapable conclusion that fluoride ions are identical whether they are derived from calcium fluoride, sodium fluoride, or some other salt which dissociates to form fluoride ions in water solution. Biological observations give added confirmation to this concept, which is so fundamental to our consideration that the association has asked that statements be sent to your committee by other chemists whose competence is recognized throughout the chemical profession. We hope that these will be made a part of this record.

These chemists include the following and others:

Dr. Farrington Daniels, president in 1953 of the American Chemical Society; a member of the National Academy of Sciences; and chairman of the department of chemistry at the University of Wisconsin. He is a recognized authority in the field of inorganic and physical chemistry.

Dr. Henry S. Frank, professor of chemistry and head of the department of chemistry at the University of Pittsburgh, who has sent the chairman a letter dated May 18, 1954, which he has requested be made part of the record.

Dr. John C. Bailar, professor of chemistry and director of the division of inorganic chemistry in the department of chemistry at the University of Illinois.

Due consideration of the statements of these chemists of recognized competence and integrity should dispel the confusion caused by the pseudoscientific and careless assertions regarding the chemistry of fluorides made by some of the opponents of municipal water fluoridation.

I also wish to interpolate at this point to say regarding some previous testimony by Dr. Brusch and others that in my opinion no

competent chemist would refer to calcium fluoride as an organic fluoride. Calcium fluoride is, in fact, a typical example of an inorganic fluoride salt. Even in its crystal form, that is, as a solid, it exists as calcium ions and fluoride ions in a geometrical arrangement within the crystal. When the crystal dissolves in water, the ions are dissociated in the sense that they no longer retain any fixed position with respect to each other but become distributed throughout the solution and the calcium ions are totally indistinguishable from all calcium ions from any other source and similarly the fluoride ions are indistinguishable from fluoride ions from other fluoride salts.

I should state further that the relative solubilities of calcium fluoride and sodium fluoride have no pertinence to this hearing. In order to obtain a 4-percent solution of sodium fluoride one must add 40 grams—40,000 milligrams—of sodium fluoride to each 1,000 cc of water. This is approximately 20,000 times the concentration of sodium fluoride employed in a controlled fluoridation procedure. Similarly, a solution of 16 milligrams of calcium fluoride in 1,000 cc of water would provide a concentration of fluoride ion of about eight times that involved in a community fluoridation program. It is apparent therefore that the relative solubilities of the two salts have no significance in the matter of drinking water fluoridation.

In the United States, fluoride is found in large deposits particularly associated with rock phosphate. This material is mined and the fluoride is recovered by chemical transformation into its several salts, some of which are employed for water supplementation. We may therefore describe the fluoridation program as a procedure in which a natural substance is shipped from an area of abundant production into an area of deficiency. Fundamentally, the principle is no different from the production and distribution of other foods.

Another point which warrants emphasis is the fact that a nutritional substance which may be required in small quantities to maintain life, may on the other hand be seriously toxic if it is consumed in large amounts and in a concentrated form.

Vitamin A is a classical example of such a nutrient. The Food and Nutrition Board of the National Research Council recommends a daily dietary allowance of about ½ to 1½ milligrams of this nutrient. This quantity may be obtained from several wholesome foods. Vitamin A is also available in highly concentrated forms which through accidental misuse have led to a serious poisoning. This fact is well known to nutritionists and to pediatricians and other physicians and it has been the subject of editorial comment in the Journal of the American Medical Association (1). It should be noted that the toxic effects were observed only when the quantities consumed were in the range of one hundred times or more greater than the recommended allowance.

A fairly close analogy exists between the amounts of vitamin A and the amounts of fluoride ion which are beneficial and also the amounts which may cause injury. When persons use a drinking water containing one part per million fluoride ion, their daily intake of this nutrient may range from a fraction of a milligram in the case of infants up to about one and one-half to two milligrams in the case of adults. These quantities correspond closely to the recommended amounts of vitamin A. We can extend this analogy by another illus-

tration. To obtain toxic amounts of vitamin A from oleomargarine fortified at the usual level of 4½ milligrams per pound of food would require the daily consumption of some 15 to 40 pounds of this food.

Similarly, it would be impossible to drink sufficient water containing fluoride ion at a level of 1 part per million to produce a toxic effect attributed to fluoride. It would be necessary to drink 50 to 100 gallons of such water at one time in order to ingest a possible lethal dose of fluoride. Any such attempt would obviously lead to death by "water poisoning" before symptoms of fluoride poisoning were observed. The basic purpose of this analogy, however, is simply to emphasize the fact that the recognized toxicity of relatively large amounts of fluoride is not in itself any indication of lack of safety of the very small amounts associated with fluoridated water.

Before discussing the specific evidence which relates to the safety of fluoridation, it will be well to outline briefly the general areas from which this information is derived.

I. OBSERVATIONS WITH ANIMALS

a. Accidental exposure of animals to forage contaminated with fluoride-bearing dust.

b. Exposure of animals to fluoride through the attempt to employ fluoride-containing rock phosphate as a substitute for other forms of calcium phosphate in feeds.

c. Experimental studies involving the administration of inorganic fluoride to a variety of animal species.

II. OBSERVATIONS ON HUMANS

a. Workers unwittingly subjected to industrial exposures to fluorides.

b. Individuals exposed to single large amounts of fluoride through accident.

c. Studies with volunteers receiving known amount of fluoride.

d. Individuals who for many years have used drinking water containing from 1 to 14 parts per million of fluoride ion.

e. Observations for periods up to 8 years in pilot fluoridation studies.

By way of indication of the quantity of data available, it may be noted that the following publication contains a listing of more than five thousand separate reports: the title of this article is "Classified Bibliography of Publications Concerning Flourine and Its Compounds in Relation to Man, Animals, and Their Environment Including Effects on Plants" from the Kettering Laboratory in the Department of Preventive Medicine and Industrial Health, College of Medicine, University of Cincinnati, Cincinnati, Ohio.

Since any careful evaluation of the safety of fluoridation requires the detailed study of several hundred comprehensive original reports, many individuals will prefer to rely upon the conclusions of agencies of recognized competence in the biological and medical field. Two reviews of special significance are the report of the Ad Hoc Committee on Fluoridation of Water Supplies (2) of the National Research Council, and the report of the Council on Pharmacy and Chemistry of the American Medical Association (3). Both of these committees

reviewed the evidence and concluded that the use of drinking water containing 1 part per million of fluoride ion is safe.

A very recent report on water fluoridation prepared by a committee of the St. Louis Medical Society (5) has been filed with your committee. This group concluded that "No other public health measure has had more thorough study prior to adoption than the proposal for fluoridation of the community water supply whose natural concentration of fluorine is deficient."

By way of summary of the physiological effects of fluoride, it may be pointed out that the most sensitive indicator of excessive intake of fluoride is the appearance of mottling of the enamel when fluoride is ingested during the developmental period of the teeth. Objectionable mottling of the teeth does not occur with controlled fluoridation (6) but noticeable mottling occurs when the fluoride content of water is several times the concentration required for the dental benefits. Absence of mottled enamel is therefore a demonstration that the fluoride level is too low to permit other detectable adverse physiological effects.

Next in the order of sensitivity to excessive exposure to fluoride are bone changes. Impairment of bone function has never been detected in this country as a result of exposure to fluoride in drinking water even after long continued use of water containing up to 14 parts per million of fluoride ion. Changes have been observed, however, in the case of a few workmen exposed over many years to very large amounts of fluorides as dust or vapors. Post-mortem analyses have been reported for two such individuals who died of disease not related to fluoride (7). They were exposed over a period of about 20 years to an estimated daily intake of 15 to 25 milligrams of fluoride. The bones of one individual contained 50,000 milligrams and those of the other, 90,000 milligrams of fluoride. It may be noted that the lower of the two figures is about the total amount which would be ingested by daily use of drinking water containing 1 part per million of fluoride ion consumed over a period of 125 years. Since the major portion of ingested fluoride, up to levels of 4 to 5 parts per million, is eliminated in the urine, (8) it is obvious that use of fluoridated water could never lead to the skeletal levels observed in these individuals with high industrial exposure to fluoride. These bone studies do emphasize, however, that even when the body takes in fluorides beyond the capacity of the kidneys immediately to excrete the excess, nature has provided a safety mechanism through the remarkable ability of the human skeleton to absorb and retain the excess.

An exposure greater than that just described is necessary to produce changes in the soft tissues of the body. Effects upon the kidneys and other non-skeletal tissues have not been observed in animal experiments until quantities or concentrations in the neighborhood of 100 to 500 times those involved in water fluoridation are administered. For example, effects upon the kidneys have been noted in dogs when they received 5 to 8 milligrams of fluorine per kilogram of body weight per day (7). By way of contrast, it should be noted that the average adult, in order to ingest this relative amount of fluoride, would have to drink 80 to 100 gallons of water containing 1 part per million of fluoride ion each day.

A pertinent consideration in assessing the safety of fluoridation is the remarkable fact that the crucial demonstration was obtained

through long-term exposure of humans to high levels of fluoride intake in drinking water. The scientific advantage of measuring the effect directly on humans is evident. In assessing the safety of any substance, it is highly desirable also to know its effect when administered for long periods of time and at levels many times those which will be used under controlled conditions. All of these conditions were provided not by human intent, but by a circumstance of nature. Approximately 4 million people in the United States have, for many years, used drinking water containing fluoride ion at a concentration from 0.7 to 3 parts per million or more (9). In Texas alone, over 60,000 individuals used water containing from 3 to 5 parts per million of fluoride ion (10). Special studies, including the use of X-rays, were made in Bartlett, Tex., (11) where the water contains 8 parts per million of fluorine. No evidence of injury other than mottled enamel was observed.

I understand, by way of interpolation, that some additional evidence is available of further studies of Bartlett, Tex., and I think that those will be made available to the committee. There was no functional impairment of the bones and even the X-rays revealed only questionable evidence of increased bone density in 11 percent of those examined. One of the highest exposures to fluoride in drinking water occurred in Bauxite, Ark., where after many years of use it was found that the well water contained approximately 14 parts per million of fluoride ion.

Many additional studies have been reported from areas where the drinking water contains at least 1 part per million of fluoride ion. These reports include studies of excretion, (8), (8a), (8b), bone fracture experience and height and weight studies (12), and careful examination of vital statistics data (13). The results of all of these studies have resulted in the conclusion that controlled fluoridation presents no hazards to health.

In spite of the mass of evidence relating to safety of fluoridation which was available before pilot fluoridation projects were initiated, it still seemed desirable to include medical examinations as a part of some of these studies. The results of 6 years of water fluoridation have been reported for the Newburg study (6). The pediatric examinations which are a part of this study have revealed no abnormalities which can be attributed to the added fluoride. Seven years' observation of fluoridation in the Southbury Training School, Southbury, Conn., have failed to reveal any evidence of injury to middle aged and elderly inmates or employees. The studies have included frequent X-rays of the skeleton on a large number of these people; urinary studies; blood counts and smear examinations; and occasional studies of liver function (14).

A remarkable observation is the low level of fluoride reported in the blood of individuals using fluoridated drinking water (15). When using a drinking water containing about 1.2 to 1.3 parts per million of fluorine, the average blood fluoride concentration was only 0.04 part per million and the highest observed value was only 0.09 part per million. These data emphasize the remarkable effect of fluoride deposition in bone and of kidney excretion in preventing the accumulation of fluoride in the blood.

This statement can provide only the briefest outline of some of the pertinent considerations relating to the safety of fluoridation. As

noted earlier, there are hundreds of published articles which bear upon this point. The information included here emphasizes the fact that damage to soft tissues occurs only at such high levels of intake as to be of no concern in water fluoridation. If further emphasizes the remarkable ability of the body to excrete fluoride under normal conditions and to sequester and store fluoride in the bones under unusual conditions.

In conclusion, it should be remembered that over a period of many years extensive and numerous surveys and studies have failed to reveal any hazard to health from the ingestion of drinking water containing fluoride ion in concentration of 1 part per million.

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Mr. HALE. Thank you, Dr. Doty. Are there any questions?

Mr. PELLY. Mr. Chairman.

Mr. HALE. Mr. Pelly.

Mr. PELLY. I would like to ask the witness if fluorides disappear in the boiling of water or if it becomes more concentrated due to the evaporation?

Dr. DOTY. One would naturally presume that to the extent that water is concentrated by evaporation, that the fluoride content would increase to that extent.

May I supplement that, however, by saying that in all of the experience which we have had that has been taking place—in other words, the millions of people who have been using fluoride-bearing water have been doing exactly that, and it is probable that that is one of the factors which leads to the intake of that quantity which is dissoluble. In other words, the determination of the quantity that is dissoluble was not obtained by finding the actual amount that was ingested each day by the individual. It was absorbed by seeing the concentration in the water that was used for all of these people—drinking, cooking, in cooking of foods; goes into the preparation of canned food, and processing of foods and juices and every other way that an individual normally employs, and the drinking of water, and under all of that set of conditions. It was observed that a level of about 1 part per million in the water to begin with was the concentration which was both safe and dissoluble.

Mr. PELLY. In bathing, the body absorbs considerable water, does it not?

Dr. DOTY. There is no evidence to that effect, no.

Mr. PELLY. There is not?

Dr. DOTY. No. The transfer of water across the skin is negligible.

Mr. PELLY. I always thought you weighed more after you took a bath than before.

Dr. DOTY. I do not think that would be true, after drying yourself.

Mr. PELLY. I gather from your testimony that 1 part per million of fluoride in water is not the actual amount that one gets, but because of cooking, that you actually get a concentrated form, so that you are getting more than that, and that is considered by you as a safe level?

Dr. DOTY. That is correct. We have to distinguish between the concentration, which means a given amount in a given volume and between the amount which means the total ingested, irrespective of the volume that is involved; and the intake of water by any individual will involve that which he drinks directly, that which he consumes with food processed in the water; beverages made using boiling water, and so on, so that the over-all measure of the effect is made under actual conditions of use.

Mr. PELLY. Well, is it not true that in warm climates, or warm seasons, that an individual absorbs a great deal more water than he does in periods of cool weather or in cool climates?

Dr. DOTY. That is probably true, and if I may extend my remarks a little bit in that regard, I would point out that that is one of the reasons why it is not recommended that the same concentration; the same level of fluoride be employed in water in such hot climates.

May I point out further, however, that there are a number of additional factors which would be considered in thinking of the safety of its use under those conditions.

In the first place, an individual who is drinking a large quantity of water under those conditions is perspiring freely, probably. It has been shown that there is excretion of fluorides in the sweat.

Secondly, those individuals who drink large amounts of water are excreting large volumes of urine and as it has been shown, that even up to the level of 4 to 5 parts fluoride in the water, a large proportion of that ingested, fluorides is excreted in the urine.

So that there are many safety factors; many details of physiological aspects which bear upon that particular subject.

Mr. PELLY. Have any experiments been made with regard to using the chemical, if it is called a chemical, as fertilizer for plant life; and how it affects say the tomatoes, or juice of tomatoes that one would drink, or orange juice? Would that include fluorides, if the fluorides were placed in the soil?

Dr. DOTY. There is no significant increase in the content of fluorides in ordinary plant products. Some of the types of products to which you refer would tend to dilute one's intake of water, because the large amount of water in those articles would tend to dilute the intake of fluorides, rather than to increase it.

Mr. PELLY. The Florida delegation used to provide the Members of Congress with free orange juice all of the time, and they have done away with that custom—I am sorry to say.

I think we can all feel then very safe, if we do drink lots of orange juice, and milk, and tomato juice. I know that Mr. Beamer, a member of our committee, is constantly sending out little cans of tomato juice, which we enjoy very much.

Dr. DOTY. I would regard those all as wholesome foods.

Mr. PELLY. Some of the visitors who are here in Washington in connection with this hearing, who do not enjoy the Washington water—will not take it—can feel safe then if they drink orange juice and other canned juices that are available.

I think that does not solve the problem of bathing.

That is all, Mr. Chairman.

Mr. PRIEST. Mr. Chairman.

Mr. HALE. Mr. Priest.

Mr. PRIEST. Mr. Chairman, I had 1 or 2 questions I wanted to ask.

Dr. Doty, we have had testimony before the committee on yesterday or the day before, the conclusions of which, without fully going into it, were that there is a difference between the fluoride naturally in water and that purposely added to water.

I gather from your testimony, that from the chemist's viewpoint that the ions—I believe you call them—are identical, whether they come from calcium fluoride, or sodium fluoride, or whatever source they may come from.

Dr. DOTY. That is correct.

Mr. PRIEST. Is that a pretty generally accepted view in the chemical field?

Dr. DOTY. That is practically a unanimous view.

Mr. PRIEST. You reported also in connection with your discussion of that point, that several chemists, very eminent chemists, have made reports on this.

Dr. DOTY. That is right.

Mr. PRIEST. May I ask, Mr. Chairman, that those that have been referred to, the ones that he referred to, which may not yet have been received, be made available. I certainly hope that we will get them

and that there will be a follow up to be certain that they are received by the committee.

Now, just one other question, and I do not want to prolong this discussion.

On page 2, you made this statement:

> Fluoride is a "trace element in nutrition" and water is a natural source of this nutritional element.

Will you just very briefly break that phrase down into a layman's language.

Dr. DOTY. Yes. It means just exactly what it says. "The trace element" means one which ingested in a very small quantity, is considered a trace; an element, of course, in nutrition means that it is a factor important in nutrition. The reason that was put in quotes was that is practically the language used in the Ad Hoc Committee report of the National Research Council.

Mr. PRIEST. Thank you, Doctor. That is all, Mr. Chairman.

Mr. HESELTON. Mr. Chairman.

Mr. HALE. Mr. Heselton.

Mr. HESELTON. Doctor, I regret that I was unable to get here in time to hear all of your statement.

I would like to inquire whether you have discussed the effect and determined the effect on people beyond childhood; that is, upon people who are over the period of time that has been suggested do benefit by taking fluorides in any form?

Dr. DOTY. That was discussed only incidental in my formal presentation here.

It is included in the vital statistics. In other words, the measurements in various population groups of the amount of different types and degrees, which will include the aged as well as the young, and to that extent my reference here to vital statistical data do apply to such individuals.

I may say there is further additional reference both to the dental benefits to children and to the adult, and with respect to the safety to the adult.

One further point I referred to here in that connection was the experience of the Southbury Training School in Connecticut, where they have had fluoride-bearing water, used that for a number of years, and where it has been used by both the inmates and the employees. In that institution there are some who are quite elderly, and in very extensive medical examination of most of those individuals they found no evidence of injury to those particular individuals.

With reference to the dental benefits, the dental benefits which are obtained and are obtained during the period of childhood, that is, while the teeth are developing, are retained into adult life. There have been studies made, comparing 40-year-olds, for example, who have lived their entire life in Colorado Springs, drinking Colorado Springs water, where the water contains about two and one-half parts fluorides; comparing those 40-year-olds, that is their mouth conditions, with those of 40-year-olds in Boulder, Colo., where the water contains a very low percentage of fluorides.

Now, it has been found that the same ratio of benefits, dental benefits, observed in children is still observed in those adults and that

those adults who have lived in that fluoride area, that is, Colorado Springs area, have retained a larger number of teeth than have the individuals who lived in the area without fluoride. There have been rather extensive studies with adults.

Mr. HESELTON. You have anticipated the second question I wanted to ask you.

My attention has been called—first, were you here yesterday?

Dr. DOTY. Part of the time; yes.

Mr. HESELTON. Did you hear Dr. Dean testify?

Dr. DOTY. Yes.

Mr. HESELTON. My attention has been called to the fact that he testified as to the prophylactic effect of fluoridation up to the age of 9 years only while there has been other testimony, I am told, that would show that the number of decayed teeth, in both Newburgh, N. Y., and Grand Rapids, Mich., among the individuals of the age 14 exceed that in communities where there was no fluoridation.

Would you comment on that?

Dr. DOTY. Yes, I would be very happy to.

You are correct, of course, in saying that he testified with regard to children up to the age of 9 in those areas where fluoride is merely being added, because that is the maximum length of time that it has been added in a given community. However, Dr. Dean also testified with respect to very extensive studies which he and his colleagues made some years prior to that in which they observed primary 12- and 14-year-old children who had lived their entire lifetime in an area where the water, incidentally, contained fluorides. So actually he testified both with respect to children up to 9 years of age, and with respect to children at an older age.

Now, what Dr. Dean pointed out was that, of course, where fluoride has been purposely added for a period of 5 years, you can only compare that then with 5-year-olds; in a community where it has been present all of the time, you see, because only the 5-year-old children in this one community will have used it for 5 years.

The 10-year-old children have only used it during the last 5 years of their lives.

Now, whenever fluoride has been added for a period of 9 years, there will be children up to 9 years of age who will have used that water throughout their entire lifetime. The 10-year-old age group and the 12-year-old age group would only have used it during the last 9 years of their lifetime.

Now, when you compare then the appropriate age group in a city which is receiving controlled fluoridation, with that age group in the area where the fluoridation has been there, as I say, incidentally, you find identical results; but obviously it is not possible to compare 12- and 14-year-olds in Grand Rapids, for example, with 12- and 14-year-olds in Aurora, Ill., for the reason that the Grand Rapids experiment has not been proceeding for 12 to 14 years.

Mr. HESELTON. You say that those studies have been made?

Dr. DOTY. Yes, sir.

Mr. HESELTON. What conclusions were reached?

Dr. DOTY. You mean from the studies in those areas where the water incidentally contains fluorides?

Mr. HESELTON. In comparison with the others.

Dr. Doty. In comparison with the others. They have found that the results, when they compared those age groups or those children who had received the water throughout their entire lifetime, were the same.

Mr. Heselton. In your annotations, have you made reference to those studies?

Dr. Doty. Those studies will be referred to in Dr. Dean's report. It is referred to in there.

Mr. Pelly. Mr. Chairman, may I ask another question? I believe the gentleman has yielded the floor?

Mr. Hale. Mr. Pelly.

Mr. Pelly. Doctor, is it true that fluorine, so far as certain industries are concerned, contaminates the water so that it causes great damage, almost put certain industries out of business. Is that not true? We had a query on that. We have to have pure water for paper manufacturers, for instance.

Dr. Doty. I am not sure that I know the direction of your question. I think, however, that it relates to whether or not there is an ill effect on industrial use of the water.

Mr. Pelly. Discoloration of paper, and other products that are manufactured.

Dr. Doty. May I comment in that regard, that that was one of the things that was given early consideration before any pilot study project was inaugurated, and there has been no evidence that the use of water containing 1 part per million fluoride has an adverse effect or adversely affects any industrial processes.

I may say for example, that many industries have for years used water containing considerable more fluoride than this particular amount. As a matter of fact, there was a public statement of one of the large breweries of St. Louis just a short time ago saying that they had no objections to controlled fluoridation of the St. Louis water supply.

Another industry, or other industries have anticipated this problem. The baking industry some years ago investigated the possible effect of fluoride upon the use of yeast and other products in the baking of breads. Other industries have also anticipated the same problem. They wanted to assure themselves that the use of this water would not complicate their procedures.

A very extensive review of that consideration appeared in the Journal of the American Waterworks Association about, I believe, 6 months or a year ago.

We know of no industry which will be handicapped by the use of this water.

Mr. Pelly. Thank you.

I would like to ask you as to whether or not it is possible to put fluorine into milk, for example, so that it would be possible for those who, on religious basis, could order either fluorine-free milk, or those that wanted fluorine and where it was recommended by their dentists, could buy it if they wanted to and not impose it upon all of the people who have objected to it.

Dr. Doty. May I be permitted to comment rather extensively on that point? I will be very happy to do so.

Mr. Pelly. I think it should be in the record, Mr. Chairman.

Dr. Doty. I will be glad to do it.

Let me say first that extensive consideration has been given to the possibility of adding fluoride to one or a number of food products.

Now, one of the particular points that I made in the early part of my statement was the fact that water is the only vehicle which has been demonstrated to be a safe method of providing dietary fluoride. If that were not true, it would be possible to add fluoride, to supplement other materials with fluoride, and allow people to obtain it in that particular way.

I would like to point out that the quantity of fluoride required by the child—he must receive a certain amount in order to receive the benefits—he should not receive an excessive amount in order to eliminate the possibility of unesthetic effect of the mottling of the teeth. Consequently, the amount which the individual obtains must be kept within fairly narrow limits.

There is quite a margin of safety, but still it must be kept within fairly narrow limits.

Now, the amount of water which an individual ingests is more nearly constant each day than any other single food element. That is one factor to be considered.

A second factor to be considered is that we simply do not know whether fluoride added to milk with have the same beneficial effect which will be attained from fluoride in the water.

Now, there are certain theoretical chemical reasons for anticipating difficulties there.

That is due to the fundamental fact, that we simply have no demonstration that this addition of fluoride at the same level to milk will produce the same dental benefits which will be produced, or which are always observed, when fluoride is added to water in this particular concentration.

Now, may I also comment on the subject of so-called mass medication?

I think obviously, for example, when you are enacting legislation you have to accept a certain definition in order that you can enact legislation which applies just to a particular thing and not to everything else.

So, we must also arrive at some sort of a commonsense definition of medication.

Now, when a doctor prescribes for you some drug or material to be used in the treatment of a specific disease, I think we would all agree that that is medication. In other words, when I drink orange juice to obtain vitamin C, or when you do, you are in effect using a material to prevent the development of a disease, because a lack of vitamin A may lead to a condition which in the gross symptom is referred to as scurvy, and so the drinking of orange juice then is the taking in of material which prevents the development of a disease.

When a child drinks milk or other food, which contains vitamin D, that child is being protected by the ingestion of that food material from the development of a disease which in its gross form is known as rickets.

When individuals eat ordinary food containing vitamin B1, they are preventing the development of a disease which in its gross manifestation is referred to as beriberi. So that you can say that every nutrient which is required by the body is for preventing disease.

Now, if you wish to extend the definition of medication to every food which is ingested, then I am perfectly safe in saying that that is medication; but if you wish to accept a definition for medication which excludes the ingestion or nutrient materials, for the benefit which they provide to the body, then you must, of necessity, exclude fluoridation from the concept of medication.

Mr. ROGERS. Mr. Chairman. Will the gentleman yield?

Mr. PELLY. I will yield to the gentleman.

Mr. ROGERS. I am glad you referred to orange juice, because I come from the State of Florida and I am glad to hear you say that milk and orange juice are safe.

Mr. PELLY. I am sorry that the gentleman from Florida was not here earlier, because I have already referred to the benefit of orange juice and expressed a disappointment that we do not still have the orange juice dispensed to us regularly by the delegation from Florida.

Mr. HALE. As there any further questions?

Mr. HESELTON. Mr. Chairman.

Mr. HALE. Mr. Heselton.

Mr. HESELTON. Doctor, in connection with your bibliography, also Dr. Dean's; and some other witnesses who have testified, may I inquire whether copies of each of these articles to which references have been made are available to the committee?

Dr. DOTY. Some of them have been made available, but not all of them. In the event that the committee wishes, I am sure that we can make such articles available to the committee.

Mr. HESELTON. I expect that the staff can get whatever we need from the Library of Congress.

Mr. HALE. Are there any further questions?

Mr. HARRIS. Mr. Chairman.

Mr. HALE. Mr. Harris.

Mr. HARRIS. Dr. Doty, I have not had a chance to look over your brief statement, and regret that I did not get here in time to hear you deliver it. You may have covered this. You did, I notice, refer to the amount of fluorine in water by artificial means.

Dr. DOTY. Yes.

Mr. HARRIS. Now, it is true, is it not, that some areas of the country and of the world have more natural fluorine in the water than they do in other areas; is that right?

Dr. DOTY. They naturally contain higher amounts. It is all the same fluorine, because, after all, man does not create fluorine. All of the fluorine which is available is that which occurs in various deposits in nature, but some water naturally contains higher amounts of fluorine than other waters. Yes, you are correct.

Mr. HARRIS. Now, the natural fluorine is the same as the fluorine that you put in by artificial means?

Dr. DOTY. Yes, sir; that was covered quite extensively in the statement.

Mr. HARRIS. Yes.

Dr. DOTY. And was directed to the attention of the members that some very eminent chemists have filed statements for the committee for use in that regard.

Mr. HARRIS. Yes, I appreciate that and the purpose in referring to it is to get your comment on a statement that was made that in cer-

tain areas of the country, the water of that area has a greater amount of fluorine in it than others, and it is shipped for consumption into other areas of the country, where they do not have a large amount of fluorine in their products, and consequently it has been contended that those people might get a double dose.

Have you covered that in your statement?

Dr. Doty. I think I have to some extent. That is largely a misconception.

The increase in the fluoride content of plant products is not large. The only type of food product in which the concentration of fluoride would increase considerably in a so-called high fluoride area, would be those products which contain bone, because as animals become older, and as they use, or as they are fed larger amounts of fluorine, a considerable amount of that fluorine would be deposited in the bones of that animal, but not the soft tissues of the animal.

Mr. Harris. That is all, Mr. Chairman. Thank you very much.

Mr. Heselton. Mr. Chairman.

Mr. Hale. Mr. Heselton.

Mr. Heselton. I do not recall ever having seen any fluorine. This is probably a peculiar question to ask, but can you tell us what fluorine is? Is it a fluid or a solid substance?

Dr. Doty. Well, fluorine in elemental form, which never occurs as such in nature, is a gas; but when fluorine is embodied with other chemical elements, as it always is when it is found in nature, it will ordinarily be a solid.

Now, the sodium fluoride which is used quite extensively in water fluoridation is an ordinary white solid. It would be indistinguishable in general appearance from many other similar chemical compounds.

The fluoride which is added to water is a fluoride compound which will provide a fluoride ion to the water, because in the analytical procedures which the control chemist applies to the water he measures by a chemical analysis the amount of fluoride ions——

Mr. Heselton. You say ions?

Dr. Doty. That is correct.

Mr. Heselton. Would you enlighten me on what that is?

Dr. Doty. That would have to be a somewhat technical explanation. It depends somewhat on an extensive knowledge of atomic structure, and the fluoride ion is formed when an outer electron shield of the fluoride atom takes up an electric, an additional electric ion. I am sorry that I cannot put it in simpler terms.

Mr. Hale. We will have to accept the fact that there are ions and let it go at that.

Mr. Heselton. Yes.

Mr. Hale. Doctor, I want to ask you a couple of questions. The effect of fluorine on the teeth, or the desired effect is, of course, to harden them. Does it have a similar effect on the bones? I have understood that you testified that it has a similar effect on the whole bone structure of the body. Is that right?

Dr. Doty. The beneficial effect of this fluoride is on the teeth. The exact mechanism which is involved in producing that protective effect is not completely known; whether it is due to a hardening effect or whether it is due to a different type of effect, I think it would be better not to go into the theories involved in that. Now, if a comparatively

large amount of fluorides are ingested by an individual, the bones will become somewhat harder and somewhat more resistant to breaking. However, there is a great deal of variation in that effect, and I doubt if any such affect upon the bones has ever been detected at the low levels which are involved in the ordinary processes of fluoridation.

Mr. HALE. It certainly does not do any practical harm to the bones?

Dr. DOTY. There have been very extensive studies of that. For example, Dr. McClure, at the National Institutes of Health, observed a very large number of inductees, comparing those who had lived throughout their lifetime in areas where water contained fluorides, comparing those individuals with the same aged individuals who had lived throughout their lifetime in areas which did not have fluorides contained in their water. He went back and obtained the history of all of the fractures, breaking of bones of those individuals.

He studied the heights, the weights and other factors of that sort pertaining to those individuals and he found no evidence that there was any higher experience of fractures or breaking of bones in those individuals who had lived in the fluoride areas than others.

Mr. HALE. It does not make them brittle so far as anyone knows?

Dr. DOTY. No, not at these levels.

Mr. HALE. The only other question I wanted to ask you is with relation to the natural foods in which a trace of fluoride is observed. Can you give a few samples or illustrations?

Dr. DOTY. Well, the largest amount, so far as ordinary foods are concerned, would be any food which contains bone.

Mr. HALE. Contains what?

Dr. DOTY. Bone of animals. That is, there are a few foods to which bonemeal is added. The meal is made by grinding up the bones of certain animals.

Now, as I have pointed out, when animals ingest fluorides throughout their lifetime, they deposit some of that fluoride in the bone, in the skeleton, and if the bones are included as a supplement or as a part of the food material they will naturally carry some of that.

Now, I should point out further, however, that this fluoride which is found in bones is not only very slightly soluble, but it takes a considerable period of time to bring it into solution. So that when a bonemeal is eaten by an individual or food containing monemeal, only a fraction of the fluoride from that bonemeal will actually be absorbed by an individual and will reach his blood stream.

Now, another type of food which contains a comparatively large amount of fluoride is tea leaves, for example, oftentimes containing a fairly large amount of fluoride, except it is not eaten, and since we never use it in very large amounts, very large amount of tea leaves at any time, it does not provide a very large amount for human intake.

Some fish products also contain fairly high amounts of fluoride as compared to other food products.

Mr. HALE. There is a perceptible amount of fluoride in a cup of tea?

Dr. DOTY. Yes, there is; not a harmful amount, certainly. I am not sure that there is enough to do any good, but I am sure there is not enough to do any harm.

Mr. HALE. The putting of bonemeal on grass, for example, that does contain fluoride, does that have any effect—

Dr. DOTY. The bonemeal itself contains fluoride, but I know of no evidence that it contributes to the fluoride content of the grass.

Mr. HALE. Thank you very much, Doctor. Your presentation has been extremely enlightening, and very helpful.

Dr. DOTY. Thank you.

Mr. HALE. Before proceeding further with the testimony of any other witnesses, the Chair would like to inquire as to the number of individuals present who desire to testify, because our time is limited. We have to conclude these hearings today and the forenoon is pretty well gone.

Is Dr. W. D. Armstrong, University of Minnesota, present?

Dr. ARMSTRONG. Yes, Mr. Chairman.

Mr. HALE. Is Dr. Francis F. Heyroth, American Public Health Association, University of Cincinnati present?

Dr. HEYROTH. Here, Mr. Chairman.

Mr. HALE. You both desire to testify?

Dr. ARMSTRONG. Yes, Mr. Chairman.

Dr. HEYROTH. Yes, Mr. Chairman.

Mr. HALE. Is Dr. John Knutson, chief dental officer, Public Health Service present?

Dr. KNUTSON. Here, Mr. Chairman.

Mr. HALE. And Dr. Nicholas C. Leone.

Dr. LEONE. Yes, sir.

Mr. HALE. Dr. Isidore Zipkin, National Institute of Dental Research.

Dr. ZIPKIN. Here, Mr. Chairman.

Mr. HALE. Maj. Robert W. Hobson.

Major HOBSON. Here.

Mr. HALE. All of the gentlemen whose names I have called are prepared to testify and desire to testify, is that correct?

(There were numerous affirmative answers.)

Mr. HALE. The Chair has some other names.

Dr. John D. Porterfield, the Association of State and Territorial Health Officers.

Dr. PORTERFIELD. Yes, sir.

Mr. HALE. You desire to address the committee?

Dr. PORTERFIELD. If I may, sir.

Mr. HALE. And Dr. Harris and Mr. George W. Welsh.

Mr. WELSH. Yes, Mr. Chairman.

Mr. HARRIS. Yes, Mr. Chairman.

Mr. HALE. Mr. Harry E. Jordan, secretary, American Water Works Association, 521 Fifth Avenue, New York, N. Y.

Dr. KNUTSON. I would like to testify in behalf of Dr. Jordan.

Mr. HALE. And, Mr. Joseph B. Meegan.

The CLERK. His name has been crossed off.

Mr. HALE. That makes nine witnesses.

The CLERK. Mr. Welsh and Mr. Harris are together.

Mr. HALE. Mr. Welsh and Mr. Harris are together.

I think that we cannot afford to give more than, certainly more than 15 minutes to any witness.

Dr. Armstrong, will you address the committee?

STATEMENT OF DR. WALLACE D. ARMSTRONG, PH. D., M. D., MEDICAL SCHOOL, UNIVERSITY OF MINNESOTA, MINNEAPOLIS, MINN.

Dr. ARMSTRONG. Mr. Chairman and members of the committee: My name is Wallace D. Armstrong.

I should like first to identify myself and state my qualifications for presentation of testimony at this hearing.

I am professor and head of the department of physiological chemistry in the medical school of the University of Minnesota. I hold the doctor of philosophy degree with a major in physiological chemistry from the University of Minnesota (1933). I am also a doctor of medicine (University of Minnesota, 1937) and I am licensed to practice medicine in Minnesota.

I am a Fellow of the American Association for the Advancement of Science and I am a member of the American Chemical Society, the American Society of Biological Chemists, the Society for Experimental Biology and Medicine, the Northwestern Pediatric Society, the Minnesota Academy of Medicine, and the International Association for Dental Research. I was president of the latter association in 1945–46.

I am the author of 70 published scientific papers exclusive of abstracts of communications presented at meetings of scientific societies. Eight of these papers have dealt with the development of methods for the analysis for fluoride in natural materials. Thirteen other papers have described my research in various aspects of the biochemistry and clinical use of fluoride.

Thirty-five other papers have been concerned with other investigations in the field of biochemistry and physiology of bones and teeth. I have been engaged in the investigation of the chemistry and metabolism of fluoride since I wrote my doctor of philosophy thesis in 1933 on "Studies in Fluoride Analysis."

It is my opinion, based on my own work and on that of other investigators, that correctly controlled fluoridation of public water supplies affords a means for effectively reducing dental decay which is safe as regards all aspects of health.

I shall discuss only the evidence for the health safety of fluoridation of water supplies since it is stated in the title of Congressman Wier's bill that its purpose is to protect the public health. I assume that the benefits of fluoridation on dental health are accepted and recognized and are not a topic for consideration at this hearing.

Dr. Doty has covered most of this.

ANIMAL AND BIOCHEMICAL STUDIES INDICATE SAFETY OF FLUORIDATION

Laboratory studies by numerous investigators with several species of animals have shown that experimental animals tolerate many times as much fluoride as is present in correctly fluoridated water without any harm to growth, reproduction, longevity, bone structure, or alteration of any measurable physiological function.

For example, my own work contains 15 parts per million of fluoride in water, on mice, showed no effect on growth in the animals. The bone growth of experimental young and mature rats was not altered by water containing 20 parts per million of fluoride. Other

investigators, whose work is too voluminous to review in detail, have in prolonged and extensive studies made similar observations on this point.

Biochemical studies have shown that the bones and forming teeth are the only tissues which accumulate fluoride. The other tissues promptly eliminate fluoride following which it is excreted in the urine, perspiration, and feces. This point is significant because these mechanisms of prompt and large excretion of fluoride and of sequestration of fluoride in bone mineral, of which there are several acres of surface in the human body, provide together an efficient means for regulation of the fluoride content of the body fluids. In these ways the fluoride content of the body fluids (except under conditions of excessively large fluoride intakes) is kept below that which affects enzymes.

Our own studies with acid phosphates and enolase, two enzymes which are among the most sensitive to fluoride show that it is inconceivable that enough fluoride to alter the action of these enzymes could be produced in the blood and body fluids by use of fluoridated waters.

FLUORIDATED WATER NOT CARCINOGENIC FOR MICE

It has been alleged that the use of fluoridated water may increase the incidence of cancer and other degenerative diseases. Apparently the fears of fluoridation with respect to cancer are grounded on the experiments of Dr. Alfred A. Taylor which were described by Dr. Taylor in his testimony before the Delaney Committee (hearings before the House Select Committee to Investigate the Use of Chemicals in Foods and Cosmetics, House of Representatives, 82d Cong., pt. 3, pp. 1529–1543; year 1952).

Dr. Taylor in various experiments gave drinking water containing 0.45 to 4.5 parts per million of fluoride to mice of a strain which develops spontaneous breast cancer. He interpreted his observations to indicate that the incidence of cancer among the animals was not affected by the fluoridated water but that the cancer developed earlier in the animals which received the fluoridated water.

Following the publication of Dr. Taylor's work in the transaction of the Delaney committee, I conducted an experiment also designed to test the effect of fluoride in drinking water on breast cancer in mice. In this work I had the collaboration of Dr. John J. Bittner, of the Medical School of the University of Minnesota—Dr. Bittner is undoubtedly one of the world's authorities in research on the biology of breast cancer in mice. The results of our study showed that the development of breast cancer in the mice was not accelerated by 5 to 10 parts per million of fluoride in the drinking water.

The F_1 females of ZD_2 hybrid mice were maintained as virgins and distributed in three groups labeled A, B, and C shortly after weaning. Litter mate mice were distributed among the three groups. The animals were housed 10 to a cage and were all given the same food which was a standard stock diet commonly used for feeding laboratory mice. The animals in group A received distilled water containing 5 parts per million of fluoride, those in group B received distilled water containing 10 parts per million of fluoride and the animals in group C received distilled water which contained no fluoride.

I made up the waters and supplied them in large bottles to Dr. Bittner in such manner as not to disclose to him the fluoride content of the waters. Dr. Bittner conducted the animal work and examined the mice twice weekly. He recorded the date on which each individual animal developed a diagnosable breast tumor.

Since Dr. Bittner did not know the fluoride content of the waters or even which waters contained fluoride, the effect of possible unconscious bias on the results was eliminated. At the termination of the experiment the data was tabulated by Dr. Bittner who was still uninformed as the amounts of fluoride in the waters.

Dr. Alan E. Treloar, professor of biostatistics in the Medical School of the University of Minnesota, then analyzed the data by statistical methods in order to provide tests of significance between the results obtained with the animals in the three groups. The results of the eperiments are summarized in table 1 so as to show the mean age of the animals at which cancer was diagnosed.

TABLE 1.—*Comparison of ages at which mice receiving distilled water or highly fluoridated water as drinking water developed breast cancer*

Group	Number of mice	Fluoride content of water	Mean age at diagnosis of cancer	Standard deviation
		P. p. m.	*Days*	*Days*
A	36	5	360.4	91.31
B	34	10	398.6	96.29
C	31	0	398.3	96.18

Group C, in which the mean cancer age was 398.3 days, can be considered to be a control group since the mice in this group received distilled water. The animals of group A received water containing 5 parts per million of fluoride and developed cancer at a mean age of 360.4 days. This result is not statistically different from the mean of group C and would be expected to occur 10 times in 100 by chance.

The lack of significance between the results obtained with groups A and C is further demonstrated by the results obtained with group B. The animals of group B received water containing 10 parts per million of fluoride, a concentration which was twice that of the water drunk by the animals of group A. The mean cancer age of the animals of group B was 398.6 days, a result which is obviously equal to that obtained with the animals of group C, namely 398.3 days.

Dr. Treloar further writes:

> The differences between the means of groups A, B, and C have been subjected to critical statistical examination in the form of an analysis of variance. The ratio of "between means" variance to "within classes" variance, the F value, is 1.88. This falls so far short of the minimum value of 3.09 required by accepted standards for any significance to be assigned, that the differences must properly be regarded merely as chance fluctuations.

In summary, our experiments do not confirm the hypothesis that fluoridated drinking water accelerates the development of breast cancer in mice.

EXPERIMENTS WITH THE HUMAN DEMONSTRATE SAFETY OF FLUORIDATION

Laboratory studies are important in considerations of the safety of fluoridated waters. However, the experiments of prime significance for the human are the experiments of nature. These experiments have been conducted by nature with human subjects over many years in numerous communities in the United States in which high amounts of fluoride occur in the water. In many of these communities the water contains much more fluoride than that which is needed for dental-health reasons.

We have only to observe the results of nature's experiments in order to gain conclusive evidence of the safety of fluoridation. Undoubtedly other persons have or will testify in detail on this point. I will only summarize the observations which have shown (1) the crude death rates from all causes and the specific death rates due to cancer, heart disease, nephritis, complications of pregnancy, and infectious diseases are not different in the communities with high and low fluoride waters, (2) stature and weight and history of bone fractures are not related to the fluoride content of the community water, and (3) no evidence of increased incidence of skeletal osteosclerosis has been found in inhabitants of communities with waters of a high fluoride content.

FLUORIDE NOT NEW IN HUMAN METABOLISM

Intake of fluoride in food and water is not a new metabolic experience for the human and undoubtedly has occurred throughout the whole of the evolutionary development of man. The evidence for this conclusion derives from the wide distribution of fluoride in foods and waters. Practically all soil waters contains some fluoride and many contain large quantities of this ion.

I have never found a single natural article of food to contain no fluoride. Even the highly purified food table sugar (sucrose) according to my analyses contains detectable fluoride ($5 \times 10^{-6}\%$). My own studies indicate a daily intake of 0.19 to 0.32 milligrams of fluoride from the food of an average adult human dietary.

Further evidence for the normal and common intake of fluoride by the human is obtained from the fact that in my experience I have never found a human tooth or bone (animal or human) to be devoid of fluoride. These considerations indicate that fluoridation of water which, as you know, is actually a process for adjustment of the fluoride content of water, would not introduce into the body a substance for which the body lacks metabolic experience.

CONTROLLED FLUORIDATION THE EQUIVALENT OF NATURAL FLUORIDATION

There are no reasonable grounds to doubt that fluoridation with a properly chosen fluoride salt (or compound) gives the equivalent of natural fluoride in water. In either case all evidence points to the existence of fluoride ions from whatever source is to deny one of the most fundamental premises of chemistry which requires the uniformity of identity and properties of an element.

Evidence of the equivalence of fluoride in water from natural and so-called artificial sources has been obtained from their equal behaviors

in analytical chemical reactions and from laboratory experiments with animals. Furthermore, the reduction in dental caries attack rates produced by artificial fluoridation programs in Grand Rapids, Evanston, Newburgh, and so forth, demonstrates the physiological identity of fluoride added at the waterworks to that dissolved into waters from soils and rocks.

TOXICITY IS NOT QUALITATIVE

Misunderstandings have arisen in discussions of fluoridation of water owing to the fact that very large amounts of fluoride are toxic. When sodium fluoride is employed as a rat or cockroach poison, the dry and nearly pure compound is used. The aim is to produce acute lethal fluoride intoxciation in the vermin, a circumstance which would require an impossibly large intake of fluoridated water. In water fluoridation the fluoride compound is highly diluted to one part of fluoride in a million parts of water.

It is not possible to state categorically that any substance is a poison without defining the amounts of the substance or the conditions of its administration. And this applies to fluoride also. Numerous substances, including many required by the body, are toxic when taken in large amounts. Dr. Doty has already referred to vitamin A. For example, the essential vitamin D produces toxic effects in human when given in careless overdosages. One further example, air contains 21 percent oxygen and we breathe air in order to obtain oxygen for essential body needs. If an animal breathes pure oxygen, particularly under pressure, it will suffer ill effects and if the experiment is continued long enough the animal will surely die. Under these conditions oxygen is a poison.

Mr. HALE. Thank you, Dr. Armstrong. Are there any questions? The committee is indebted to you, sir.

Dr. ARMSTRONG. Thank you.

STATEMENT OF DR. FRANCIS F. HEYROTH, M. D., PH. D., ASSOCIATE PROFESSOR OF INDUSTRIAL TOXICOLOGY AND ASSISTANT DIRECTOR OF THE KETTERING LABORATORY, DEPARTMENT OF PREVENTIVE MEDICINE AND INDUSTRIAL HEALTH, COLLEGE OF MEDICINE, UNIVERSITY OF CINCINNATI, CINCINNATI, OHIO

Mr. HALE. Dr. Heyroth, the committee will hear you.

Dr. HEYROTH. Mr. Chairman and gentlemen of the committee. My name is Francis F. Heyroth. I hold the degrees of M. D. and Ph. D., both from the University of Cincinnati. I am associate professor of industrial toxicology and assistant director of the Kettering laboratory in the department of preventive medicine and industrial health, college of medicine, University of Cincinnati. I also serve as associate professor of biological chemistry in the college of medicine and as a member of the Cincinnati Board of Health.

The Kettering laboratory studies the dangers to workmen and consumers that attend the manufacture and use of potentially toxic substances. Its work on fluorides began more than 20 years ago shortly after fluorosis became recognized in Denmark as an occupational abnormality, occurring among men engaged in grinding a mineral known as cryolite or sodium aluminum fluoride. In the course of

routine X-ray examinations of these Danish workmen, an increase in the density of the shadows of the bones of many of them was noted. This was of a type not hitherto encountered. It was subsequently established that it was an effect associated with the accumulation of fluoride in the bones.

Our laboratory has made many observations on experimental animals and on human volunteers in the effort to learn the fact of known amounts of fluorides when ingested daily over prolonged periods. We sought to find what part of the dose is excreted in the urine and how much is retained in the body, where it is stored in the bones. Our goal was to determine the maximum amount that a workman might absorb daily into his tissues without storing too much in his bones.

I happen to be a member of the Cincinnati Board of Health. When the Cincinnati Board of Health was asked for an opinion on the advisability of fluoridation, I reviewed the data of our laboratory and the extensive published literature on the toxicity of fluorides at the request of my fellow members. My report to the board was recently reprinted by the British Ministry of Health as an appendix to the report of its mission to investigate fluoridation in North America.

THE NATURE OF H. R. 2341

This bill represents an attempt to initiate Federal legislation on the fluoridation of public water supplies now in progress in hundreds of cities and towns as a public-health measure for lessening the prevalence of dental decay. The House Select Committee to Investigate the Use of Chemicals in Foods, the Delaney committee, devoted 7 days in 1952 to hearings on fluoridation and issued a report on this subject dated July 10, 1952. The opening two sentences of the final paragraph of its conclusions and recommendations read as follows:

> **The advisability of fluoridating the public water supply of the Nation is essentially a local problem, to be determined for itself by each community. Your committee is not recommending that Federal legislation be enacted in this field.**

About 6 months later, H. R. 2341 was introduced and referred to your committee. It reflects the unwillingness of those opposed to fluoridation to abide by the locally arrived at decisions of the many communities that have adopted this public health measure and seeks to negate their decisions by Federal edict. Those promoting this bill may be doing so in the belief that the United States Public Health Sesrvice is seeking to promote the universal fluoridation of the water supplies of the Nation. If so, they are incorrect. Fluoridation is recommended only for those communities whose water supplies contain from natural sources less than the amount that has been shown to be optimal for dental health. In most areas this is 1 part per million: in a few, it is somewhat less. Where grossly excessive amounts occur naturally the Public Health Service has advised and insisted on the installation of equipment for the removal of the excess.

The clause in H. R. 2341 that states that "no agency of any State or of any municipality or other political subdivision of the State shall treat any public water supply with any fluoride compound" seems an attempt to exercise powers that are reserved to the States. If the bill becomes law some of its provisions might create difficulties where

fluoridation is in progress. An interstate common carrier might be enjoined from obtaining its supply of drinking water from a city where the water is fluoridated.

Any justification that the bill may have depends upon the validity of the premise in its opening clause, "To protect the public health from the dangers of the fluorination of water." The evidence that this is false and that fluoridation is safe has been brought together in three publications by me which constitute the essence of my statement and which I have submitted to the clerk for distribution to the committee.

And, I might interpolate, in preparing this report I felt deeply the sense of responsibility which had been placed upon me by my official position.

1. My report to the Cincinnati Board of Health, dated January 26, 1951.

2. Reprints of an article "Toxicological Evidence for the Safety of the Fluoridation of Public Water Supplies," published in the American Journal of Public Health, 42, 1568–1952.

3. Reprints of a letter to the editor of Industrial and Engineering Chemistry, 45, 2369–1953—entitled "Effectiveness and Safety of Fluoridation of Public Water Supplies."

These may be summarized briefly as follows: The evidence derives from four sources, (1) animal and (2) human experimentation, (3) epidemiological studies of the health of residents of communities whose water bears excessive amounts of fluorides, and (4) the results of the medical examination of workmen exposed to fluorides in industry.

Values for the maximum daily intake of fluoride that may be tolerated by animals of various species have been found from the results of the very great number of experiments performed since 1890. Expressed in milligrams of fluoride per kilogram of body weight, these values are: dairy cattle, 1 to 3; swine, 5 to 12; rats, 10 to 20; guinea pigs, 12 to 20; chickens, 35 to 70. I shall mention only one experiment done in our own laboratory. Each of two 11-months-old littermate dogs was given daily 65 milligrams of fluoride; the third littermate was given none. One dog was given its fluoride as the sodium salt, while the other was given it as cryolite. The administration was continued for 5 years and 5 months. It was stopped because of the death of the dog that had been given none. During life, no osseous changes could be detected roentgenographically in any of the dogs. Storage occurred in the bones, for the ash of those of the dog given sodium fluoride contained 10 times the amount of fluoride found in those of the dog used as control, and given none. No noteworthy histopathologic changes were found in the organs of the fluoride-fed dogs.

The painstaking human balance studies of our laboratory referred to in my introduction offer direct evidence as to the manner in which men and women disposed of the fluoride they took. One of our volunteers took daily 12 milligrams of fluoride as tablets of sodium fluoride over a period of 130 weeks. This daily dose represents the amount present in 12 quarts of fluoridated water with 1 part per million. Careful medical examination made at the end of this period revealed no evidence of any harm. Other persons took lesser doses. In none of our volunteers did any radiographic change occur in the density of their bones, even though one of them had taken 21 grams of sodium fluoride over a little more than 2 years.

The objection that 2 years is too short a period to permit conclusions to be drawn does not apply to the third line of evidence—the study of the health of persons who have lived to advanced age where the water supply contains from natural sources more than 1 part per million. Hodges found no evidence of skeletal fluorosis in X-rays of 31 persons who had lived for 18 to 68 years at Bureau, Ill., where the water has 2.5 parts per million, or in those of 86 residents of Kempton, Ill., where the content has varied between 1.3 and 3 parts per million. We have had examined the X-rays of 50 persons living in Lake Preston, S. D., where the water has 6 parts per million. One radiologist found minimal changes in two of these persons, but another radiologist could not agree that the changes were real, or beyond the normal range of variation. A radiologic survey of 114 persons who had lived for at least 15 years at Bartlett, Tex., where the water has 8 parts per million revealed minimal evidence of an increase in density of the bones of 12 percent of those examined, but in no case was there any deformity or interference with skeletal function. Medical examinations, which included urinalyses and blood counts, gave no evidence that the residents of Bartlett were any less healthy than were those of nearby Cameron, where the water contained only 0.3 parts per million. We have found that the average daily intake of fluoride by a 63-year-old man and his 57-year-old wife, long resident in Bartlett, amounted to 15.3 milligrams, while their urinary concentration approximated very closely that of the drinking water, 8 parts per million.

The examination of men long exposed in industry to a fluoride-contaminated atmosphere offers further evidence. The average urinary concentration of the previously mentioned Danish workers amounted to 16 milligrams per liter or twice that of the 2 residents of Bartlett studied by us. Medical studies of men in industries of the United States have been made to establish the safe level of the industrial environment. On comparing their X-ray findings and urinary output with those of persons who acquire their fluoride from water, it is found that an increase in bone density may be detected at a daily intake of about that that corresponds to the use of drinking water with 5 or more parts per million.

All 4 lines of evidence lead to the conclusion that fluoridation of water to 1 part per million has an ample margin of safety.

On behalf of the American Public Health Association, which in 1950 adopted a resolution recommending fluoridation, I wish to thank the committee for affording me the opportunity of appearing before it.

In other words, no evidence could be found of any harm by examination of the bones, so long as the drinking water did not contain 5 parts at least, and very minimum if any change occurred when it contains 4, 5 or more.

Mr. HALE. Thank you, Dr. Heyroth. Are there any questions, gentlemen?

Mr. HESELTON. Mr. Chairman.

Mr. HALE. Mr. Heselton.

Mr. HESELTON. Doctor, you have testified, and others have, that approximately 1 part per million is the safety factor that you observe. Would you explain why it is that during hot weather that amount is reduced?

Dr. HEYROTH. Yes. The water intake is believed to be a little higher during hot weather. There are a few cities that change the amount

added for fluoridation with the season. Charlotte, N. C., is one, I think. They drop it to about eight-tenths of a part per million in warm weather and increase it to 1.2 parts per million in cold weather, merely because of the variation of the amount of water that one would drink.

Now, what occurs insofar as the intake of any particular day is concerned, is of rather little importance. It is how much is taken in over the months and over the entire year that counts.

So, one endeavors to make it come out at an average income, intake per day over a year of 1 part per million. To do that in summer, you may have a little less in the water, because you drink more water.

Mr. HESELTON. Then it is not universally done?

Dr. HEYROTH. Not universally done; no. That is up to the regulations of the health department or the water-works board, or the council of the local community.

Mr. ROGERS. Mr. Chairman.

Mr. HALE. Mr. Rogers.

Mr. ROGERS. Doctor, I believe that you agree with the statement made here to the committee with the gentlemen who commented on this, and in which they stated that the water supply of the Nation is essentially a local problem and the passage of this would be encroachment on States' rights. Is that not true?

Dr. HEYROTH. That evidently is the thinking on it.

Mr. ROGERS. Do you not agree with that?

Dr. HEYROTH. Certainly.

Mr. ROGERS. Well, I do, too.

Thank you very much.

Mr. HARRIS. Mr. Chairman.

Mr. HALE. Mr. Harris.

Mr. HARRIS. Doctor, you explained that the Cincinnati Board of Health asked you for an opinion on the value of fluoridation. What was the action of the city of Cincinnati with reference to fluoridation?

Dr. HEYROTH. I happened to be a member, as I said, of the Board of Health.

Mr. HARRIS. Yes.

Dr. HEYROTH. I gave the report to which I referred to my fellow members on the board, and you have a copy of it.

Mr. HARRIS. Yes.

Dr. HEYROTH. The board approved it unanimously. It went in to, in due course, to the city council. They approved it unanimously. At abount that time a radio commentator began arousing fears on the part of the Cincinnati public. He appeared before the council. They conducted a public hearing, at the conclusion of which they revoted on the question.

Mr. HARRIS. You mean the council revoted?

Dr. HEYROTH. The council revoted. This time, again, they were in favor of it by 8 to 1.

Mr. HARRIS. What?

Dr. HEYROTH. By 8 to 1, in favor of it.

Mr. HARRIS. 8 to 1 in favor of it?

Dr. HEYROTH. In favor of it; yes, sir. But, this was passed not as emergency legislation and under the city laws they have——

Mr. HARRIS. Now, wait a minute. I misunderstood you. I thought you said the first time that they approved it.

Dr. HEYROTH. They approved it nine to nothing.

Mr. HARRIS. Nine to nothing the first time?

Dr. HEYROTH. Yes, sir.

Mr. HARRIS. And then they reconsidered it and the second time they approved it 8 to 1?

Dr. HEYROTH. That is right; but under our laws, unless an ordinance is introduced under an emergency clause—and this was not—then, the citizens have a right to petition for the repeal of that ordinance or for an election for the repeal of it. It takes a tenth of the registered voters in the community, from the last election.

Mr. HESELTON. How many?

Dr. HEYROTH. Ten percent of the voters. They secured a petition with an ample majority, I might say, so that it was forced to an election. It was defeated at the election by—it was 77,000, I think, against fluoridation and 55,000 for fluoridation.

Mr. HARRIS. Was that a substantial vote; or was that a rather large vote or small vote?

Dr. HEYROTH. No, it was not and there was about—the difference between those two figures represented voters who voted on other issues, but did not vote on that particular issue.

Mr. HARRIS. That is all. Thank you.

Mr. HALE. Any further questions?

Mr. BEAMER. Mr. Chairman.

Mr. HALE. Mr. Beamer.

Mr. BEAMER. Doctor, I am somewhat concerned about this. I notice that the bill spells the word with an "n" and on the statements the others spell it with a "d".

Dr. HEYROTH. That is correct.

Mr. BEAMER. I would like to have you explain that.

Dr. HEYROTH. Yes. Fluorinated, as in the bill, is not correctly drawn. Fluorine would refer to the introduction of fluorine gas and water, which would be physically impractical, or impossible. What is introduced is a fluoride salt. The fluoride ion. So, it is fluoride that is introduced and it is frequent therefore to call it fluoridation.

Mr. BEAMER. The bill is probably incorrectly drawn, then, if it were to be considered; is that correct?

Dr. HEYROTH. I would think so, on any technical ground; yes, sir.

Mr. PELLY. Mr. Chairman.

Mr. HALE. Mr. Pelly.

Mr. PELLY. Doctor, I notice that the experiments that have been conducted, as referred to in your testimony, have to do with the effect of the incidence of fluorine on cancer and on the bone structure.

Can you tell me if there has been any investigation as to the effect on such things as the sterileness of cattle or human beings in communities in relation to the proportion of fluoride in their water?

Dr. HEYROTH. There has been a great deal of experimentation not only on cattle, but on other animals.

According to the figures that I showed you, cattle are more susceptible than a great many other species. I said 1 milligram per kilogram of body weight was about the maximum that could be tolerated by cattle, whereas chickens could go up to from 35 to 70. So, there is a big difference between them.

Many varied physiological functions are included in those studies and they are thoroughly reviewed in the work of Schmidt and Rand,

which can be seen in the Journal of Veterinary Medicine and which is referred to in the small print which has been distributed.

Mr. PELLY. How about humans; does the birth rate in the various communities differ materially?

Dr. HEYROTH. Not so far as anyone has been able to find out.

Mr. PELLY. Have they tabulated the statistics?

Dr. HEYROTH. They have tabulated the figures at——

Mr. HARRIS. Will the gentleman yield?

Mr. PELLY. Yes, I will yield to the gentleman.

Mr. HARRIS. What could the human body tolerate?

Dr. HEYROTH. You mean the amount per day, or total amount in the body?

There was found in the bones of two Danish workmen who died of other causes, and a further examination was made of the bones; they were analyzed in toto. One man had in his bones 50 grams and the other had 90 grams. These men were still able to work, although there were rather extensive X-ray changes. That would give you some indication of how much might be in the body.

Mr. PELLY. How about the birth rate in the Danish communities that were referred to?

Dr. HEYROTH. These were, these were factory workers.

Mr. PELLY. Were any studies made of the workers in that factory as to their birth rate?

Dr. HEYROTH. Yes; there were very elaborate studies, but I do not recall them at the moment. There was a monograph, a very large book written on the subject of fluoride intoxication by Dr. Tirhom, now dead, who conducted that work.

Mr. PELLY. What was the final analysis?

Dr. HEYROTH. That there was no one particular sign of illness that characterized the working population of that factory other than this incidental and unexpected finding of an increased density in the shadows of the bone in the X-rays.

Mr. PELLY. That is all, Mr. Chairman.

Mr. HINSHAW. Mr. Chairman.

Mr. HALE. Mr. Hinshaw.

Mr. HINSHAW. May I inquire of this distinguished gentleman, what is the toxic dose of fluorine for man?

Dr. HEYROTH. Well, to answer that, we would have to say, taken in what time; taken at one time or what?

Mr. HINSHAW. At one time.

Dr. HEYROTH. At one time?

Mr. HINSHAW. Yes.

Dr. HEYROTH. Well, I cannot answer that, for many causes. Nobody could make a statement. You can make an——

Mr. HINSHAW. I did not say lethal; I said toxic dose.

Dr. HEYROTH. Toxic dose?

Mr. HINSHAW. Yes.

Dr. HEYROTH. I can only estimate, and I would say that one might go—two-tenths of a gram might be taken with safety and probably cause some illness. That is 200 milligrams; 200 quarts of fluoridated water.

Mr. HINSHAW. Does anyone know what the lethal dose of any particular specimen of life is?

Dr. HEYROTH. Amount taken at one time by any particular species of animal.

Mr. HINSHAW. Yes.

Dr. HEYROTH. That has never been precisely estimated by current standards; but it probably lies around 3 milligrams per kilogram and according to most recent discoveries, which I have referred to.

Mr. HINSHAW. What would that amount to per 100 kilograms?

Dr. HEYROTH. Seven kilograms is the average human weight—30 times 70; 2,100.

Mr. HINSHAW. A kilogram is a——

Dr. HEYROTH. A kilogram is a thousand grams.

Mr. HINSHAW. It would be 2,100 milligrams.

Dr. HEYROTH. Yes. So it would be 2.1 grams.

Mr. HINSHAW. Two and one-tenth grams.

Dr. HEYROTH. And that is in reasonable agreement with what can be found from incidence in which poisons have occurred. You probably know that has happened when in an institution someone, by mistake got sodium fluoride mistaken for baking powder, or flour, and there have been some instances of that sort.

Mr. HINSHAW. You mentioned the Delaney committee of Congress. I believe Dr. Miller made a very strong statement in connection with the Delaney committee report, in referring to this particular subject. Dr. A. L. Miller is a Member of Congress and parenthetically I think that the committee would do very well indeed to get Dr. Miller to come up here and ask him some questions about it. I believe that you can verify this when he comes here, but I have a quotation from his report to the House of Representatives dated March 24, 1952, in which he states:

> A check on the vital statistics of Grand Rapids, Mich.—which is the only city of any size that has had artificial fluoridation for more than 4 years—shows "an increase of 50 percent from the deaths from nephritis" and "an increase of 50 percent, over a period of 4 years, and deaths from intracranial lesions."
>
> The death rate from heart disease in the year 1944 numbered 585. Four years later, after fluoridation had started, there were 1,059 deaths.

Now, have you gone into these statistics mentioned by Dr. Miller? In reference to nephritis, intracranial lesions, and heart disease?

Dr. HEYROTH. On the statistical basis of the deaths you mentioned?

Mr. HINSHAW. Yes.

Dr. HEYROTH. I would not be willing to accept the figures of Dr. Miller as cited. I think they are in error. However, there are people who could answer that better, here, who are from the locality, from Grand Rapids.

Mr. HINSHAW. Mr. Ford represents the district in which Grand Rapids is located. He testified here. But, I believe that Dr. Miller has made some examination of the situation.

Now, I would like to ask what fluorine compound there is other than sodium fluoride which could be used for fluoridation of water with safety.

Dr. HEYROTH. Theoretically there could be a great many, but practically, the only one in use is sodium silico fluorine. That gives the fluorine ion in solution, and you have to change the actual weight of the material to be added a bit, but you get the same concentrate of fluorine ions, if you make the necessary adjustments.

Mr. HINSHAW. And, do you believe that that would be a safe thing to use?

Dr. HEYROTH. Yes.

Mr. HINSHAW. In what numbers or parts per million?

Dr. HEYROTH. One part per million of the fluoride ion.

Mr. HINSHAW. Now, you have spoke of sodium silico fluoride.

Dr. HEYROTH. It does not matter what the source itself is as long as it is fluoride ion. You may have to take more or less of it, of a given compound, in order to get the same amount of fluoride ion. As a matter of fact, even calcium fluoride could be used, but it is not nearly so soluble and would pose difficulties in the engineering plans, and water plants, but it has been stated by water works authority that it is not beyond the realm of possibility.

Mr. HINSHAW. Now, you talk about the toxic dose or maximum dose; and also the lethal dose. How much fluoride can the body of man tolerate over a period of time?

Dr. HEYROTH. Well, we have made some observations recently in which we have, in various parts of the country, where there is more than there ought to be, fluoride present in the water. We have made observations in which we have collected duplicate samples of every bit of the food and water that those people have eaten and drunk for 3 months or more.

We have sent those duplicate samples of exactly what they ate and drank to the laboratory for analysis, so we know what 2 people in each of 10 different cities, by free choice actually ingested.

Now, these people are presumed to have been, during our study, taking about the same amount of food and water that they have taken all of their lives. Some at Bartlett had lived there several years and were taking eight parts per million.

We have not found any X-ray evidence in those two persons that we studied. And yet, their daily intake amounted to 15, on an average, 15 milligrams per day of the fluoride ion, and it has not done them any harm over several years, over a good many years.

So we know that they can take at least that much. Now, how much would be toxic and would be dangerous to them, that will remain to be explored by other industrial exposures.

Mr. HINSHAW. I think that the Kettering Laboratory, of which you are the assistant director, made a study of this question of ingestion of the fluoride ion, because it was recognized to be somewhat dangerous or hazardous to the workingman, working with cryolites and sodium, and aluminum, and other materials which they have. Is that correct?

Dr. HEYROTH. That is correct. It was done under the sponsorship of the industries that were handling the fluorides in order that they might control the extent and nature of the hazard to which their workmen were exposed, and to protect them.

Mr. HINSHAW. Was it recognized as a hazard?

Dr. HEYROTH. Oh, yes; it was recognized as a hazard; certainly.

Mr. HINSHAW. How did that hazard come to be recognized?

Dr. HEYROTH. Because of this Danish experience I mentioned in industry; cryolite workers in Denmark.

Mr. HINSHAW. You say that they found that as a result of that study?

Dr. HEYROTH. That is right.

Mr. HINSHAW. And there was an increase in the density of the shadow of the bone?

Dr. HEYROTH. That is right.

Mr. HINSHAW. Now, is fluoride, or fluorine, or anything of the sort of higher density than calcium?

Dr. HEYROTH. No: it is not; and people all wondered why is it it becomes evident in the X-ray. The answer is that it must be affecting the deposits of calcium at spots or near the spots where the fluoride is deposited.

Mr. HINSHAW. What is the effect?

Dr. HEYROTH. The calcium is visible under the X-ray.

Mr. HINSHAW. What is the net effect of fluoride; is there additional calcium?

Dr. HEYROTH. There is not any displacing of calcium; making more calcium deposits in the adjacent area.

Mr. HINSHAW. Now, in other words, fluorine does not have the same effect as strontium.

Dr. HEYROTH. I am not familiar with strontium.

Mr. HINSHAW. I understand that it displaces calcium.

Dr. HEYROTH. I am not qualified to go into the question of strontium.

Mr. HARRIS. Will the gentleman yield?

Mr. HINSHAW. Yes: I will yield.

Mr. HARRIS. Doctor, is there any difference between artificial fluoridation and natural fluoridation insofar as results are concerned?

Dr. HEYROTH. None anyone can detect.

Mr. HINSHAW. Let me ask this question right along with that. Is the natural fluoride salt as found in water, sodium fluoride?

Dr. HEYROTH. No; it is probably calcium fluoride. You see when a salt dissolves in water it falls apart in positive ions or metallic ions, like it does in calcium, potassium or any other metal you may wish to consider. So, what actually exists and where it came from, you can never tell by an analysis of the water.

Mr. HINSHAW. You cannot tell what the components are.

Dr. HEYROTH. Yes.

Mr. HINSHAW. You can tell whether the particular components were sodium fluoride, sodium silicon, or calcium fluoride, or what it was?

Dr. HEYROTH. They will be sodium ions and the fluorides and calcium ions, and so on, but where they came from, or what rock stratum they came from or what it was, you can never say, because they are no longer present as they were when they were dissolved.

Mr. HINSHAW. Why, if it is not insolution, it is not broken up?

Dr. HEYROTH. No; you have the positive ions and the negative ions, which can be detected electrically. The positive ions will go to the negative pole of the electric battery and opposite will take place about the negative ions. They will go to the positive side.

Mr. HINSHAW. If you evaporate enough to get out a large quantity, what takes place?

Dr. HEYROTH. Then, you bring these ions closer and closer together, so that they crystalize as salts.

Mr. HINSHAW. The masspectrometer also will indicate the compounds in the water?

Dr. HEYROTH. Not while it is in the water. You have to get it free from the water to use the masspectrometer. You have to vaporize the water.

Mr. PRIEST. Mr. Chairman.

Mr. HALE. Mr. Priest.

Mr. PRIEST. I have just one or two questions.

Doctor, I was interested in the experiences you related with reference to the city of Cincinnati. There are certain constitutional questions involved in connection with this legislation before us that I think we have to study very carefully. That Cincinnati experience, of course, demonstrates that whether to fluoridate or not to fluoridate still is a matter that may be decided by the people within the community. That is one question that I have in mind, and I want to state at this point, if we recognize the authority of Congress to prohibit fluoridation of local water supplies, do we not at the same time recognize its authority to require such fluoridation?

On the other hand, does not the authority to prohibit also imply the authority to require anything to be done, if the Congress should desire to do that?

Dr. HEYROTH. That would appear logical to me. The whole question is whether the authority is to extend over any individual local community, either way.

Mr. PRIEST. It also involves the question in my mind, the legal aspect of it as to how far the Federal Government should go into this field of regulating strictly local water supplies, or local operations of any type whatsoever, remembering as I view it, that if we may prohibit, we may also at another time, and under other circumstances require the local communities to take certain action without their judgment being expressed locally.

I think it is a pretty basic problem that we have to consider in this matter. I hope we may be able in the course of the hearings, to get some more legal testimony on that question.

That is all, Mr. Chairman.

Mr. HALE. Are there any further questions? We thank you very much, Dr. Heyroth.

Mr. HINSHAW. Mr. Chairman, I would like at this point to introduce a letter addressed to me from Dr. C. H. Carpenter, Glendale, Calif., which is in my district, and an editorial which appeared in the local newspaper, and a very short pamphlet on the subject at issue prepared apparently by Dr. Carpenter, in lieu of his coming to Washington to testify, as he has been unable to come here. I submit this and ask that it be inserted in the record.

Mr. HALE. Without objection the letter and the editorial and the other material will be accepted and embodied in the record.

(The material referred to is as follows:)

GLENDALE, CALIF., *May 25, 1954.*

HON. CARL HINSHAW,
House Office Building, Washington, D. C.

DEAR CONGRESSMAN HINSHAW: Since I have been a specialist for the past 20 years in biochemistry as pertaining to physiology and pathological physiology of the human system, I believe that I am especially qualified to present the dangers of fluoridation of water supplies.

Due to recent illness, I do not feel able to make the trip to Washington, D. C., at this time, but in accordance with our telephone conversation yesterday afternoon, I am herewith inclosing our pamphlet, "Fluoridation—a National Menace,"

which our committee used in the city of Glendale in last year's election at which time fluoridation was defeated 2½ to 1.

Inclosed is also a copy of a letter which I wrote to the editor of the Glendale Independent a few days before the election and which letter was published in that paper.

I am sending these to you in order that you may have them recorded for the hearings.

In the pamphlet, "Fluoridation—a National Menace," I would suggest that you have recorded at least articles Nos. 1, 5, 11, 12, 13, 14, and 15 since these articles contain pertinent facts which it might be difficult or impossible for members of the committee to secure elsewhere.

It must be recognized that any fluoride compound is not a normal physiological part of any body tissue, but rather is an infiltration product.

I had a telephone conversation with one of my patients in Flagstaff, Ariz., last evening. He and an attorney patient of mine have been opposing fluoridation in Flagstaff and speaking against it on the radio for the past several days. Yesterday was election day in Flagstaff and he told me last night that the vote was running 3 to 1 against fluoridation. When the people know the truth regarding fluoridation, they will vote it down.

It is my personal opinion that there is enough authentic information in this pamphlet to make the committee or any official see the danger and seriousness of adding fluorides to public drinking water and see that it should be illegal.

Proper action of the Pure Food and Drug should make it impossible to add sodium fluoride or any other fluorides to the drinking water or foods.

I thank you for your cooperation.

With best personal regards to you and Mrs. Hinshaw, I am

Very sincerely yours,

C. H. CARPENTER, M. D.

The following letter to the editor appeared in the Glendale, Calif., Independent on Sunday, April 12, 1953:

EDITOR: During the past several months we have attempted to compile authentic information from the most reliable sources possible regarding the dangers of adding sodium fluoride to the public drinking water.

It is recognized by leading authorities in medicine and chemistry that sodium fluoride is a poison to any cell structure regardless of how small an amount is taken into the human system.

It is also recognized by leading research medical men and chemists that the fluoride poisons are accumulative in action, that is, they tend to collect more rapidly in the tissues than they are eliminated.

"The toxic dose for fluorine lies between 0.006 gm. (¼ gr.) and 0.06 gm. (1 gr.) of sodium fluoride."

Since four gallons of water containing one part per million of sodium fluoride contain a poison dose, how long before the accumulative action of sodium fluoride in the system will reach this poison dose?

It is recognized by all leading authorities that some individuals have greater ability to eliminate wastes or poisons from the system than others. Since studying many sources of information, it appears that many aged individuals, as well as those younger individuals in poor health, could quite easily collect enough of this poison in the system through the accumulative action to result in many types of diseases and even in death from this violent poison even though it were present in the water in one part per million.

Fluorine ions attack the calcium of the tissues as well as that of the blood stream, producing an insoluble calcium fluoride, weakening the structure of the teeth as well as the bone and also weakening those structures which are built and maintained by the calcium units of the system.

It is through the disturbance of the calcium units that the nerve tissue and brain building become deficient and distorted, resulting in various types of mental deficiency.

Dr. A. L. Miller (congressman) in his report on fluoridation of water states "experimental work on rats and mice indicate a lessened mental reaction in rats and mice who have had fluorides."

We were confident this action would take place from our previous studies and many years of experience in biochemistry. About 2 weeks ago I discussed points with Dr. Miller. I also discussed most of these points with Prof. H. V. Smith of the University of Arizona about 6 weeks ago.

It must be remembered that sodium fluoride has an entirely different action in the system than the natural fluorides and that these natural fluorides have little or no abnormal action upon the building powers of the nerve and bone tissues while sodium fluoride interferes with the calcium metabolism through its ionization.

These points were verified by Prof. H. V. Smith, the discoverer of the cause of mottled teeth in those communities which had excess amounts of the natural fluorides, substances which also are poison, but which are not as active as sodium fluoride.

Hon. A. L. Miller, M. D., in his report to the House of Representatives on March 24, 1952, reported "A check of the vital statistics of Grand Rapids, Mich.—which is the only city of any size that has had artificial fluoridation for more than 4 years—shows "an increase of 50 percent in the deaths from nephritis" and "an increase of 50 percent, over a period of 4 years, in deaths from intracranial lesions."

"The death rate from heart disease in the year 1944 numbered 585. Four years later, after fluoridation had started, there were 1059 deaths." "These are official figures contained in the vital statistics of the United States."

Dr. A. L. Miller's report also stated that sodium silico fluorides are even a more dangerous poison than sodium fluoride, which we have mainly discussed.

The bulletin put out by the Citizens National Research Committee, Box 41048, Los Angeles 41, gives more details about sodium fluoride and its action in the human system.

There is no known constitutional authority for one group of people to experiment upon another group of people whether the chemical used is poison or not. If human experimentation were constitutional, then you would be as fit a subject for experimentation as the animals.

C. H. Carpenter, M. D.,
1132 N. Brand Blvd.

FLUORIDATION—A NATIONAL MENACE

This pamphlet has been prepared to give factual information on the matter of injecting sodium fluoride, a poison, in public water systems.

1. Sodium Fluoride Violent Poison—Kills Rats Instantly

Sodium fluoride is a very dangerous poisonous chemical, a by-product of the manufacture of aluminum from cryolite. "Sodium fluoride is a general protoplasmic poisoning. It is used to poison cockroaches and rats and is therefore of toxicological interest" (1). "Fluorine is too active a substance to be handled" (2).

SODIUM FLUORIDE ACCUMULATIVE IN ACTION

Sodium fluoride is accumulative in action—it tends to accumulate more rapidly than it is eliminated from the body. Some people are much more susceptible or sensitive to this poison than others. Continuous use of water containing small amounts of sodium fluoride results in infiltration and chronic poisoning and hardening of body tissues.

POISON AND LETHAL (DEATH) DOSE OF SODIUM FLUORIDE

"The *toxic dose* for fluorine lies between 0.016 gm. (¼ gr.) and 0.06 gm. (1 gr.) of *sodium fluoride*. The *fatal dose* is thought to be approximately from 3 to 4 grams" (3). [Italic added.]

If this poison is tasteless, colorless, and odorless in water, how would you know whether or not you were drinking a toxic or a death dose?

Four gallons of water containing one part per million of sodium fluoride contain a poison dose. How long before the accumulative action of this poison will reach this quantity?

There are many ways of ingesting sodium fluoride besides in the water you drink, such as in foods cooked in fluoridated water, in vegetables and fruits which have been irrigated with fluoridated water, in the milk and in the liver of animals that drink fluoridated water, in soft drinks in which fluoridated wated is used, also from vegetables sprayed with fluoride compounds used as insecticides, etc.

"Autopsy findings show fatty and parenchymatous degeneration of the liver and kidneys" (3).

"Increases of 50 percent or more in deaths from heart disease and kidney disease in Grand Rapids, Mich., 4 years after fluoridation, suggests some possible connection with the presence of fluorine" (4).

Fluorides

"The systemic action is no doubt due to the deprivation of the tissues of their calcium. The mode of action is similar to that of oxalates on muscles. Fluorides produce local necrosis of mucous membranes, and, after absorption, acute and chronic poisoning characterized by gastro-intestinal upset, nutritional disturbances, and degeneration of visceral organs. Fluorides are of no value therapeutically." (3)—(Copyrighted, C. H. Carpenter, M. D., all rights reserved.)

2. Fluorides Cause Diseased Teeth

"Mottled enamel is a diseased condition of the teeth due to the presence of fluorine in the drinking water. There are three types of mottled enamel, the mild, chalky white type, the more severely stained type, and the pitted, corroded type. In addition, the mottled teeth are defective in formation and calcification and are, therefore, structurally weak. The defect is irreparable and permanent. It has been estimated by the Tucson Dental Society that it would cost $1,000 for dental care of the teeth of the average person with mottled enamel, up to adulthood, at which time the teeth must usually be replaced by false ones.

"Drinking water containing as little as 1 p.p.m. of fluorine will cause mottled enamel.

"Evidence indicates that the fluorine passes into the blood stream and interferes with the calcification of the unerupted teeth of children."—American Journal of Public Health 25:696 (June, 1935)

3. Compulsory Mass Medication of Water is Unconstitutional

Fluoridation of city water supplies constitutes a socialistic form of forced "mass medication," violating our State laws and the Federal Constitution according to the opinions as expressed by numerous judicial authorities and compiled by the associate editor of the Hastings Law Journal of the University of California's Hastings College of Law.

The treatise of Hastings College of Law on the subject of fluoridation holds "that fluoridation programs are an improper exercise of a State's police power, which includes the power to protect and promote the public health, in that they involve an unwarranted interference with individual liberty." This treatise further states "The presence of dental caries creates no 'clear and present danger' of an epidemic or emergency of a contagious or infectious disease * * *" (6).

4. Warning—Delaney Committee, Washington, D. C., Warns Against Fluoridation of Water

The House of Representatives Select Committee To Investigate the Use of Chemicals in Foods and Cosmetics warned American cities to be careful before deciding to add fluoride to drinking water as a way of reducing tooth decay.

The warning of caution was approved by all seven committee members, and Representative A. L. Miller, M. D. (R., Nebr.) prepared a separate report urging delay in fluoridation.

The committee report said "It is essential, therefore, that all the facts concerning fluoridation be disseminated, and an opportunity given to the people of each community to decide for themselves whether they desire to assume, at this time, the *calculated risk inherent in the program.*" The report also said "The committee is of the view that *sufficient number of unanswered questions concerning the safety of this program exists* as to warrant a conservative attitude" [Italic added.] (7).

5. Fluorine Should Not Be Confused With Chlorine

The adding of sodium fluoride to drinking water should not be confused with the adding of chlorine which is used to help purify drinking water.

Sodium fluoride does not help purify water, but rather is a poison.

Proponents of sodium fluoridation state that chlorine is also a poison, but we know that chlorine is not tasteless and odorless as is sodium fluoride; therefore, if an excess amount of chlorine were put in the water, you would immediately reject it for drinking while if an excess of sodium fluoride were put in the water, you would not be able to detect it.

6. Spend—Waste—Tax—Poison

99.4 PERCENT OF ALL PUBLIC WATER IS USED FOR PURPOSES OTHER THAN DRINKING

The city of Glendale consumes a year round average of 174 gallons per capita per day. If every person consumed 1 gallon of water per day, only six-tenths of 1 percent of all the water fluoridated would be used for human consumption. The remainder would be used for watering lawns and gardens, laundry work, bathing, washing cars, industrial uses, etc.

The proponents of water fluoridation claim that it is effective only to children up to 12 years of age. Therefore, the treated water which would be used by them would be less than one-tenth of 1 percent.

There are many ways that children consume liquid, such as milk, soft drinks, and bottled water. If parents wish to have their children used as human guinea pigs, there are many economical ways of treating their drinking water than to put it into a system where 99.4 percent is used for other purposes than drinking.

The proponents of fluoridation recommend that the content of sodium fluoride be reduced in hot weather since human consumption of water increases as the temperature rises. With the reservoirs that are in the Glendale water system, it would take 7 or 8 days to flush out this system in order to reduce the fluorine content of the water. By this time thousands of people would be subjected to an overdose of poison.

7. Fluoridation Laws Violate Religious Freedom Guaranteed by the Constitution

Fluoridation of public water supplies is not only the beginning of inroads in socialized medicine, but is the beginning of the destruction of religious freedom.

Quoting from Hastings Law Journal, we read "Freedom to maintain and practice the belief that medication is not to be taken is protected by the 14th amendment. Freedom to exercise this belief is guaranteed so long as it does not present a 'clear and present danger' to the health of the public * * *" (6).

According to California law State health authorities are empowered to permit fluoridated water to be bottled for those who desire to have it as medication.

8. Use of Sodium Fluoride Results in Fluorosis and Other Diseases

SODIUM FLUORIDE INTERFERES WITH CALCIUM METABOLISM RESULTING IN DISEASE

Sodium fluoride interferes with calcium metabolism, the fluorine ions unite with calcium to form insoluble calcium fluoride which infiltrates the tissues resulting in fluorosis (abnormal hardening of the teeth and mottling of teeth), osteosclerosis (abnormal hardening of the bone), and osteomalacia (a disease where bones become flexible and brittle leading to deformities). "It is attended with rheumatic pains; the patient becomes weak and dies from exhaustion. It occurs chiefly in adults and is due to calcium-phosphorous deficiency" (8).

The interference with calcium metabolism not only predisposes to other bone diseases, but also predisposes to practically every known disease (in other words, it causes a person to be more susceptible to disease), the severity of which would depend upon the age of the individual, the general state of health of the individual, and the quantity of sodium fluoride consumed.

9. Danger—Mechanical Failures or Human Error Might Destroy the Community

The promoters of the scheme tell us that there can be no mechanical failure in the machines that feed the fluorides to the water supplies. However, common sense teaches us that man never made a machine that can't fail at some time or other. The mechanical device could fail and over-dope the water, thus undermining the health or killing all the people in the community.

Are you going to stake your life on the supposition that a machine will never fail?

Also, one man operating the machine could hold your life in his hands. In case of human error, whether the result of negligence, alcoholic influence, or sudden mental disturbance, an entire community could be poisoned.

Do we want to trust our lives to the recognized imperfections of the best machines along with the element of human error?

10. A Ready Weapon for Saboteurs

Large stockpiles of fluorides at the reservoirs of water supplies in any community would provide the perfect weapon for saboteurs. An enemy could dump the poison into the water supplies and destroy all the people in the community.

Sodium fluoride in water is tasteless and colorless and odorless. The damage would be done before it was detected. The fluoride compounds are usually added to the water at the beginning of the distribution system. This would make it easy for an enemy to contaminate the entire supply.

An excess of sodium fluoride added to water supplies could wipe out entire communities with greater effectiveness than the atomic bomb—leaving our buildings and resources intact to be taken over by an enemy.

11. Sodium Fluoride Has an Entirely Different Action Than the So-Called Natural Fluoride Waters

We have been informed and presented with literature regarding the water of Deaf Smith County, Tex. The analysis of the water indicates that the water does not contain sodium fluoride, but rather it contains mainly the fluorides of calcium and phosphorus. These compounds are almost insoluble and therefore do not ionize readily like sodium fluoride.

Sodium fluoride in solution as in water ionizes into sodium ions ($Na+$) and fluorine ions (F^-). The fluorine ions unite with calcium upon contact with it.

It is the fluorine ions which attacks the calcium in the body tissues and fluids to form an insoluble calcium fluoride which cannot be utilized by the human economy.

Free calcium is normally transformed into living units of calcium which have certain and very important physiological functions to perform in the human system. It is the interference with the calcium metabolism which causes sodium fluoride to be much more dangerous to the human system than the fluorides of calcium, phosphorus, or other similar fluorides.

As a result of the sodium fluoride ionization, a major portion of the body chemistry is involved when the fluorine ions are present even in small amounts in the human system. The degree of involvement of the human system would be dependent upon the concentration of the sodium fluoride taken into the system, the quantity consumed, the accumulative action (chronic poisoning), and the age and vitality of the individual.

Since normal calcium units are a very important factor in building nerve, muscle, and bone tissues, the fluorine ions, by attacking the calcium in the system, interfere with normal bone growth and development, strength, nerve stability and the mental capacity of those taking sodium fluoride into their systems.

Sodium fluoride as such would not be expected to exist in waters containing natural fluorides and calcium, because, should sodium fluoride get into the underground water, it would quickly dissolve and would ionize and the fluorine ions would attack the free calcium present in most natural waters and form the insoluble calcium fluoride.

Calcium fluoride in natural fluoride waters, when taken into the system, would only tend to infiltrate the teeth and Haversian canals of the bones and other tissues, resulting in abnormal hardening and interference with normal nourishment of those parts so involved. This action would be in proportion to the total amount ingested.

The natural fluoride waters can produce chronic poisoning and disease as evidenced in St. David, Ariz., "a community in which all the native inhabitants have typical mottled teeth" (9), one of the manifestations of chronic poisoning. Large sums of money are being spent in order to remove the natural fluorides from the waters of some communities so that the people will not become chronically poisoned.

However, the so-called natural fluoride waters have far less tendency to interfere with calcium metabolism because of their insolubility and relative lack of ionization; therefore, there would be a relative lack of fluorine ions which could attack the calcium within the system. Without interference with the calcium, the calcium units in the system would continue to build nerve, muscle, and bone tissue and therefore there would be little tendency to nerve or mental disturbance from the use of natural fluoride waters.

On March 1, 1953, Professor H. V. Smith of the University of Arizona stated that some of their most intelligent students in the university come from areas where there are natural fluoride waters. This shows that the natural fluorides do not interfere with brain capacity, at least to any great extent, in those qualified to attend college.

The proponents of sodium fluoridation are confusing the people by using as examples individuals who have lived in areas where there are natural fluorides of calcium and phosphorus—where the people did not become mentally or physically underdeveloped. Those proponents of sodium fluoridation of our waters do not inform the public of the entirely different action of sodium fluoride (which they are recommending to be added to our water) than that of the natural fluorides.

Likewise, as evidenced by the experimentation at the University of Arizona, sodium fluoride stunts the growth of the rats. Natural fluorides do not seem to interfere with the bone development of individuals, other than the resultant infiltration of the body tissues and their abnormal hardening.

Since both of these structures (nerve and bone) are built by the same calcium units, it indicates that the natural fluorides do not interfere with calcium metabolism, while sodium fluoride has been definitely proven to so interfere.

Now it is becoming quite clear than sodium fluoride could be used to control the mental capacity of all individuals brought under its influence. Is this what conspirators are trying to do to the American people through the city water supplies as reported by Princess Ileana? (C. H. C.)

12. Fluorides Are Inorganic

Organic means "arising from an organism; pertaining to a substance derived from a living organism." (8).

Organism means "any organized body of living economy; any individual animal or plant."

"Organic chemistry" is that "branch of medicine which deals with substances that contain carbon." (8).

The following quotation indicates that the fluorine ions of sodium fluoride transform the bone substance from an organic to an inorganic substance by removing the carbon.

"The method proposed herein depends upon the affinity of bone for fluorine which was first noted in 1893 by Carnot (9). Chemical analysis microscopic 10, 11, 12, 13, 14 and X-ray refraction examinations indicate that bone is a carbonate apatite with the probable formula of $(Ca_3(PO_4)_2)n \cdot CaCO_3$ in which $n=2$ or 3. It is logical to believe that fluorine may replace the carbonate radical with the formation of fluorapatite. The completeness of this replacement would depend on the contact with fluorine." (9).

Organic substances must contain carbon. (C. H. C.)

13. Fluorides Are Abnormal to Plant and Animal Life

Fluorides are protoplasmic poisons; therefore, they are poisons to the substance of the cell structures of the body and therefore cannot be a normal constituent of the organic substance of the cells.

When fluorides attack any normal cell substance, that substance becomes an abnormal or pathological substance within the system, whether it be in the teeth, bones, liver, or other structures.

Do not be misled by those individuals who call any fluoride found in plant or animal tissues an organic fluoride. Fluorides are foreign elements to living substances (plant and animal) and are there by reason of infiltration—much the same as a nail may be found in a cement block, but that does not make a nail a normal constituent of cement blocks. Having Communists in a community does not mean that we must have Communists as a component part of a community in order for it to be a community.

Fluorides are inorganic. Fluorine is a halogen. Halogens are dependent upon moisture or water for their activity. Sodium fluoride dissolves in water and ionizes into sodium and fluorine ions. When fluorine ions unite with another element, they tenaciously hold on to it. It is one of the most active chemical elements. (C. H. C.)

14. Fluorine Ions Distort Body Chemistry

We must bear in mind that fluorine, its compounds, and ions are just as active and poison today as they ever were. It is also important to realize that the fluorides produce a wide variety of influences in the human system which could be numbered into the thousands and that the various distortions and deficiencies in the body chemistry brought about through its tenacious action on the elements within the human system are so many and varied that an individual consuming this violent poison, even in small amounts, becomes correspondingly distorted and deficient in his or her body chemistry. A deficient and distorted biochemistry produces abnormal or pathological physiology. Thus we see that a poison such as sodium fluoride (which is capable of producing such a wide variety of disturbances in the biochemistry of the system) would tend to make a person more susceptible to every known disease, including mental and physical development and including interference with normal mental faculties, especially if slightly more sodium fluoride were added than that which has been recommended. (C. H. C.)

15. Inherited Tendencies

As far as tooth decay (dental caries) is concerned, that is mainly dependent upon inherited tendencies. Almost every person, especially those past 35 or 40 years of age, have had the opportunity to observe the marked differences in dental decay in children of the same family eating the same foods and drinking the same milk and water.

It is now recognized that, if the parents of a child were physically active the year before the child was born and if the parents were not under an abnormal amount of nerve strain during that period, the child tends to be strong with good nerves, muscles, and bones. The same basic factors responsible for building the bones are also responsible for building the teeth.

Strong teeth are more resistant to decay. Young people or children with good inherited tendencies who keep active and have a good balanced diet (and with no fluorides in the water) would tend to have strong teeth.

Even though a person inherited good tendencies to develop and maintain good teeth, his tendency may be changed if the proper materials are not present in his diet. A general mixed diet containing a sufficient amount of organic food elements secured from the animal and plant kingdoms must be supplied to the system in order to maintain the necessary building materials and the proper building powers. This building power is a normal physiological process which takes place in areas where there are no fluorides in the water.

Good inherited tendencies, proper foods, pure and unadulterated water, and proper physical activities tend to maintain strong, healthy teeth as well as healthy structures of the body generally.

NO GROUP OF PEOPLE HAVE A CONSTITUTIONAL RIGHT TO EXPERIMENT UPON ANOTHER GROUP OF PEOPLE

1. Handbook of Materia Medica, Toxicology and pharmacology—Davison, 4th edition.
2. Text-book of Materia Medica, Therapeutics and pharmacology—Butler, 5th edition.
3. Synopsis of Materia Medica, Toxicology and pharmacology—Davison, 3d edition.
4. Newsletter, February 1953, Public Improvement Committee, care of the Chicago Association of Commerce and Industry.
5. American Journal of Public Health 25 : 696 (June 1935).
6. University of California's Hastings Law College article, the Los Angeles Daily Journal, April 21, 1952.
7. Report No. 2500, House of Representatives, 82d Congress, second session.
8. The American Illustrated Medical Dictionary, Dorland, 11th edition.

9. Bone Contact Removes Fluorine, by H. V. and Margaret Commack Smith, Arizona Agricultural Experiment Station.
10. "Hendricks, S. B., Hill, W. L., Jacob, K. D., and Jefferson, M. E., Structural characteristics of apatite-like substances, and composition of phosphate rock and bone as determined by microscopical and X-ray diffraction examinations, Industrial and Engineering Chemistry, vol. 23, page 1413, 1932."
11. "Classman, Z., The Artificial Preparation of the Main Constituent of Bones and Teeth. Zeit Physiol. Chemi., vol. 177, page 62, 1928."
12. "Kramer, B., and Shear, M. J., Composition of bone, Journal of Biological Chemistry, vol. 79, page 147, 1928."
13. "Bogert, L. J., and Hastings, A. B., The calcium salts of bone, Journal of Biological Chemistry, vol. 94, page 473, 1931–32."
14. "Boissevain, C. H., and Drea, W. F., Spectroscopic determination of fluorine in bones, teeth, and other organs, in relation to fluorine in drinking water, Journal of Dental Research, vol. 13, page 495, 1933."

CITIZENS NATIONAL RESEARCH COMMITTEE

P. O. Box 41048, Los Angeles 41, Calif.

Mr. HARRIS. Mr. Chairman.

Mr. HALE. Mr. Harris.

Mr. HARRIS. Mr. Chairman, I should like to submit for the record a letter in the form of a statement from Dr. R. L. Smith, Jr., secretary-treasurer, Central District Dental Society of the Arkansas State Dental Association, Little Rock, Ark., and a copy of the resolution which was adopted on this subject.

Mr. HALE. Without objection, it is so ordered.

(The letter and resolution referred to are as follows:)

CENTRAL DISTRICT DENTAL SOCIETY,
Little Rock, Ark., May 20, 1954.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D. C.

DEAR SIR: The disease of highest incidence known to man is dental decay. Dental decay is rampant amongst our population, especially in our youth. The best weapon yet found against this disease is the fluoridation of water supplies Diligent and thorough research and study by the dental and allied professions throughout the years have proved this fact.

In our State of Arkansas there originated a part of the original investigation in the role that fluorine plays in reducnig dental caries. The incidence of caries, especially in the young people of our state, is extremely high. Since there are not enough dentists in our state to adequately control the ravages of this disease, we immediately utilized this weapon to aid us in our unending war against dental disease.

There are, at the present time, 13 communities in Arkansas that have fluoridated water supplies serving approximately 210,000 people, or one-third of the people who are on communal water systems. More and more cities every year are converting to fluoridated water systems.

In view of the above facts, we strongly request unfavorable report on H. R. 2341 and urge its defeat by the Congress. We also request that this letter be filed as a part of the record of the hearings on this bill. Let us keep the best weapon against dental caries ever found—fluoridation of community water supplies.

Sincerely,

R. L. SMITH, Jr., D. D. S.,
Secretary Treasurer.

RESOLUTION OF CENTRAL DISTRICT DENTAL SOCIETY

MAY 19, 1954.

WHEREAS, the dental profession in the United States has recommended the fluoridation of public water supplies as a safe and effective procedure for reducing the incidence of dental caries, and

WHEREAS, this recommendation has been based on an accumulation of many years of careful study and research by competent individuals and groups, and all scientific findings substantiate the effectiveness and safety of fluoridation under properly controlled conditions, and

WHEREAS, every major national health organization including the United States Public Health Service has gone on record favoring the fluoridation of community water supplies, and

WHEREAS, the passage of House Resolution Number 2341 would be a repudiation of all the scientific study and research supporting fluoridation of water supplies, and

WHEREAS, the passage of this bill would deprive the citizens of this United States of their rightful opportunity to improve the nation's future dental health, therefore be it

RESOLVED, That we, the undersigned members of Central District Dental Society, State of Arkansas, urge that the Interstate and Foreign Commerce Committee render an unfavorable report on the hearing on House Resolution Number 2341, to recommend the defeat of this bill, and to file this resolution for record as part of the hearings.

Mr. HALE. Dr. John Knutson, Chief Dental Officer, Public Health Service.

Dr. KNUTSON. Mr. Chairman, I would like to ask your permission to have the Public Health Service testify, present its testimony as a unit. That will include Dr. Zipkin and Dr. Leone. I mention this because if it is presented as a unit, as I request, it will take about 35 to 40 minutes.

Mr. HALE. You want to present your testimony as a unit?

Dr. KNUTSON. The three of us together.

Mr. HALE. The three together.

Dr. KNUTSON. Yes, sir.

Mr. HALE. That is the intention of the committee. We intended to hear you first, then Dr. Leone, then Dr. Zipkin.

Dr. KNUTSON. I would like to have their testimony integrated into my testimony, with their permission.

Mr. HALE. The Committee has in mind sitting until about 12:30.

Dr. KNUTSON. Might I suggest that you pass us over until after lunch, then, if you want to hear one or two of the others.

Mr. HALE. Very well.

Major Robert W. Hobson, office of the Surgeon General, United States Army.

He is not in your group?

Dr. KNUTSON. Mr. Harris is here, and he would like very much to go on now.

Mr. HALE. Mr. Harris, of Grand Rapids.

Dr. KNUTSON. And Mr. Welsh.

Mr. HALE. Very well, we will hear them at this time.

Mr. Harris, we will hear you.

STATEMENT OF WILLIAM LESLIE HARRIS, SUPERINTENDENT OF THE WATER DEPARTMENT, CITY OF GRAND RAPIDS, MICH.

Mr. WILLIAM L. HARRIS. Mr. Chairman and gentlemen of the committee, I am William Leslie Harris, superintendent of the water department, city of Grand Rapids, Mich. In 1929, I was graduated by Albion College, Albion, Mich. with an A. B. degree with majors in mathematics and chemistry. Ever since that time I have been employed by the City of Grand Rapids and except for a very recent ap-

pointment to my present position my work assignment has dealt with water treatment practice.

That assignment therefore, covered approximately 25 years, first as chemist and later in 1940 as water treatment plant supervisor. I have given lectures on fluoridation practice at in-service training courses held at the University of Michigan and at Michigan State College.

In 1947 I was awarded the George W. Fuller award by the American Water Works Association in recognition of the pioneering work on fluoridation. The citation in parts is as follows, quoted:

> In recognition of . . . his resourcefulness in instituting fluoride treatment of a public water supply for the control of dental decay.

At the present time I am chairman of the American Water Works Association committee E 5.10 fluoridation materials and methods.

A public water supply must be operated at all times in such a manner that it will provide adequate water service, furnish protection to property and preserve the public health. It is obvious that the primary purpose of a water treatment plant is concerned with the preservation of health and that the other phases of water supply are matters of supply and distribution.

My work for the past 25 years has been that of a specialist in the public health field. As such, it has been my duty to guard the health of the community I serve and to keep abreast of any developments in the field which would enable a higher safety factor to contribute toward an improved well being of the citizens. The actual plant supervision has required a knowledge of chemistry, hydraulics, bacteriology, and mechanics.

The relationship of the fluoride content of a water supply to dental health has been of great and growing interest to the water works profession for more than 20 years. In 1933 a method of fluoride determination was published by Dr. Elias Elvove, of the United States Public Health Service.

This was the first procedure which came to our attention for the determination of the minute amount of fluoride which occurs naturally in some waters of this and other countries. The use of this test and improved methods which folowed indicated that fluoride-bearing waters were usually underground supplies and that the surface water supplies of the Midwest were essentially devoid of any fluoride.

In 1944 I was consulted by members of the Michigan Department of Health in regards to the feasibility of adding fluoride compound to a communal water supply to maintain a concentration of one ten-thousandth of 1 percent fluoride.

The interest of the Michigan department in such a procedure, which they felt would greatly improve dental health, was not explored until after an opinion was obtained in regards tot he legal responsibilities by the attorney general of the State of Michigan. A consideration of the technical aspects involved in the application of a fluoride compound ot the city water supply indicated that there was no unusual problem involved and that safe and dependable procedures were available.

Mr. PRIEST. Mr. Chairman.

Mr. HALE. Mr. Priest.

Mr. PRIEST. May I interrupt you there?

Mr. WILLIAM L. HARRIS. Yes.

Mr. PRIEST. It would help me a great deal if I may know, as you proceed, whether one ten thousandth of 1 percent is substantially one part per million.

Mr. WILLIAM L. HARRIS. That is one part per million.

Mr. PRIEST. Thank you.

Mr. WILLIAM L. HARRIS. For in the course of water treatment practice there are at least 30 different chemical agents which are used in amounts varying from the small amount identical with fluoride application to quantities a hundred times or more greater.

As a guide in my consideration I had the records of the natural fluoride content of certain waters of the United States. In some instances the fluoride content of these supplies exceeded the proposed application by a factor of more than 10 to 1 and yet there was no instance of an untoward effect by the occasional use of such water by an individual nor any ill effect even by continuous use by those whose permanent teeth were fully erupted. A variance 10 times greater than the prescribed dosage was not considered possible in water treatment practice and so a completely safe operating range for fluoridation existed.

Flouridation of the Grand Rapids water supply started January 25, 1945, with the expressed purpose of maintaining a fluoride content of between 1.0 and 1.2 parts per million. It has been functioning ever since with a minimum of mechanical difficulty and with complete safety to the public and the operators of the water treatment plant.

The source of the fluoride ion at our installation has been sodium fluoride but several other fluoride compounds are also available for this purpose. In any case, the nature of the fluoride ion itself is not changed by its separation from the natural condition in which it existed in the ground and, therefore, it can have no effect other than that which it would impart naturally.

The two pieces of chemical feed equipment used by us for fluoridation are standard items which might well be used for any of several other water treatment chemicals. Each is equipped with regular dust removal apparatus which discharges filtered air to the outside of the building. The machines are equipped to feed a continuing amount of fluoride which is controlled by a loss in weight device so arranged that once the operator has set the amount to be applied per hour, no further manual adjustment is needed.

If the machine develops operating difficulty it signals for attention by the operator. Additional safety factors are invoked in the installation by limiting the amount of chemical which may be added to the hopper of the machine and by a mechnical limitation of the feed rate of the equipment. At the present time the average amount of sodium fluoride used is 600 pounds per day or 25 pounds per hour. The absolute maximum of the two machines is 100 pounds per hour (50 pounds for each machine) so that at most the dose could not be made to exceed four times the amount required.

If such a condition were made to exist then the limited size hoppers would soon be emptied. But if for a moment we consider that such a concentration (which is still safe) was developed for an extended period of hours it would still be reduced by later mixing with water of a lower content which had either preceded or followed it. There-

fore, I do not consider it possible to significantly overdoes our water supply with a fluoride-bearing compound.

It has been my privilege to visit other fluoride installations and at no time have I witnessed any condition which might endanger the public health. As chairman of the aforementioned water works committee on fluoridation materials and methods I was able recently to examine the tabulated results of a survey of operating conditions in 51 fluoridation installations spread across the Nation. In no instance did I find any condition indicated which was other than safe.

Because we made the first, and had for some time the largest fluoridation installation, our plant has been visited by technical and professional men from all parts of the globe. These visitors have left the water treatment plant with expressions of surprise at the simplicity of the installation and high regard for its safety.

One of the most recent visits was by the British Fluoridation Mission and while their investigation at Grand Rapids was only a small part of their thorough study of the matter it is nevertheless worthy of mention that they returned to England and made a favorable report on their findings.

Daily analyses are made on samples of treated water collected both in the plant and out on the distribution system. A copy of a typical report covering the month of January 1954, is included with this statement. Undoubtedly the results thereon are as near to a constant figure as tests would be on a fluoride-bearing waterwell installation.

It will be noted that column 5 showing the amounts of fluoride applied varies but four hundredths of a part per million from maximum to minimum. Columns 7 through 14 give the laboratory results of analyses on various samples of treated water. In all instances the findings are well below the limit of 1.5 parts per million of fluoride set by the United States Public Health Service and it must be kept in mind that the determination of this limit evolved from consideration of continuous use of the supply.

These tests now constitute a daily record for each and every day since the inception in January 1945. The consistent results contained in this record stand as proof of the original tenant when fluoridation was first considered, namely, that from a water treatment viewpoint it is a safe and orthodox procedure.

(The table above referred to is as follows:)

Fluoride application, Grand Rapids, Mich., January 1954

Day of month	Pumpage (millions of gallons)	Sodium fluoride		Fluoride applied (parts per million)	Chemical analyses (parts per million) fluoride									
		Inventory (pounds)	Pounds used		Lake	Clear well	Distribution system							
							High pressure				Low pressure			
							Plant tap	State laboratory	4 fire stations, average	25 Morningside	Plant tap	957 Davis, N. W.	4 fire stations, average
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1	21.269	48,223	420	1.02	0.12	----	----	----	----	----	1.01	----	----
2	20.000	47,832	391	1.01	.03	----	----	----	----	----	1.08	----	----
3	20.000	47,442	390	1.00	.07	----	----	----	----	----	1.02	----	----
4	24.485	46,966	476	1.00	.08	1.07	1.08	----	----	1.04	1.07	----	----
5	30.740	46,365	601	1.01	.06	1.11	1.10	----	----	1.08	1.08	----	----
6	30.402	45,772	593	1.00	.03	1.08	1.11	1.10	1.06	1.11	1.14	1.07	1.13
7	24.758	45,288	484	1.01	.03	1.12	1.12	----	----	1.01	1.08	1.01	----
8	34.500	44,615	673	1.00	.08	1.10	1.09	----	----	1.14	1.07	1.15	----
9	28.529	44,056	559	1.01	.04	----	----	----	----	----	1.05	----	----
10	23.800	43,594	462	1.00	.12	----	----	----	----	----	1.09	----	----
11	23.800	43,131	463	1.00	.11	1.04	1.09	----	----	.98	1.05	----	----
12	30.690	42,534	597	1.00	.06	1.13	1.09	----	----	1.08	1.09	1.09	----
13	35.100	41,850	684	1.03	.05	1.02	1.03	1.06	1.05	1.06	1.08	1.05	1.05
14	35.100	41,166	684	1.00	.05	1.13	1.11	----	----	1.08	1.05	----	----
15	30.506	40,570	596	1.01	.04	1.10	1.09	----	----	1.06	1.06	1.03	----
16	23.800	40,106	464	1.00	.04	----	----	----	----	----	1.07	----	----
17	21.265	39,693	413	1.00	.04	----	----	----	----	----	1.09	----	----
18	20.000	[1] 69,304	389	1.00	.07	1.10	1.14	----	----	1.05	1.08	----	----
19	33.798	68,644	660	1.00	.07	1.19	1.11	----	----	1.07	1.07	1.19	----
20	34.300	67,971	673	1.01	.05	1.13	1.14	1.12	1.11	----	1.14	1.08	1.15
21	34.300	67,302	669	1.00	.06	1.13	1.10	----	----	1.07	1.11	1.08	----
22	29.327	66,737	565	.99	.06	1.19	1.11	----	----	1.10	1.11	1.07	----
23	26.600	66,219	518	1.00	.08	----	----	----	----	----	1.12	----	----
24	22.381	65,781	438	1.01	.06	----	----	----	----	----	1.12	----	----
25	25.194	65,288	493	1.01	.09	1.10	1.12	----	----	1.10	1.15	----	----
26	26.800	64,765	523	1.00	.12	1.10	1.09	----	----	1.12	1.11	1.13	----
27	26.800	64,242	523	1.00	.07	1.12	1.08	----	----	1.06	1.11	1.12	----
28	32.046	63,616	626	1.01	.08	1.15	1.12	----	----	1.07	1.09	1.14	----
29	31.433	63,004	612	1.00	.09	1.04	1.09	----	----	1.07	1.08	1.13	----
30	26.600	62,486	518	1.00	.10	----	----	----	----	----	1.10	----	----
31	23.950	62,020	466	1.00	.05	----	----	----	----	----	1.09	----	----
Total	852.273	----	16,623	----	----	----	----	----	----	----	----	----	----
Average	27.493	----	536	1.00	.07	1.11	1.10	1.09	1.07	1.07	1.08	1.10	1.11
Maximum	35.100	----	684	1.03	.12	1.19	1.14	1.12	1.11	1.14	1.15	1.19	1.15
Minimum	20.000	----	389	.99	.03	1.02	1.03	1.06	1.05	.98	1.01	1.01	1.05
1953 average	26.767	----	523	1.00	.06	1.09	1.09	1.12	1.11	1.13	1.08	1.11	1.11

[1] Received 30,000.

NOTE.—Table compiled by Chief Chemist W. L. Harris.

Mr. HALE. Are there any questions?

Mr. HINSHAW. Mr. Chairman.

Mr. HALE. Mr. Hinshaw.

Mr. HINSHAW. Mr. William Harris is not a qualified man in the subject of medicine, as well as some of these other subjects and I suppose is not qualified to testify as to any of the medical aspects of the use of fluorine, but is superintendent of the water department of Grand Rapids. Is that correct?

Mr. WILLIAM L. HARRIS. That is correct.

Mr. HINSHAW. May I ask, Mr. Harris, whether this 25 pounds per hour is a constant rate of input into the water system.

Mr. WILLIAM L. HARRIS. That would be an average amount if we were operating throughout the year, average pumping, which we are

not. The amount varies from 25 pounds, but would never be less than would be consistent if we were operating at that rate throughout the year.

Mr. HINSHAW. On the other hand, the pumping equipment that takes in the fluoride operates at a constant rate of flow, or does it operate at a changing rate?

Mr. WILLIAM L. HARRIS. It is not intermittent. However, it does vary from one day to another. We might, perhaps, be pumping 20 million——

Mr. HINSHAW. I am speaking of during any 1 day.

Mr. WILLIAM L. HARRIS. During any 1 day.

Mr. HINSHAW. Yes.

Mr. WILLIAM L. HARRIS. The local pumpage is quite regular, very nearly a constant rate.

Mr. HINSHAW. It goes from the pump into a storage reservoir and then out into the distribution system; is that correct?

Mr. WILLIAM L. HARRIS. It goes into the reservoir from our plant and then on into the system.

Mr. HINSHAW. Into the reservoir following the introduction of the fluoride.

Mr. WILLIAM L. HARRIS. Yes.

Mr. HINSHAW. So that the rate of application of fluoride is just about in proportion to the amount of water that is introduced through the pump?

Mr. WILLIAM L. HARRIS. Yes.

Mr. HINSHAW. That is all. One more question, if you please. Where do you acquire the sodium fluoride?

Mr. WILLIAM L. HARRIS. We have had it delivered by several companies. The latest shipment came from the Blockson Chemical Co., Joliet, Ill.

Mr. HINSHAW. Are they the prime suppliers of sodium fluoride?

Mr. WILLIAM L. HARRIS. Yes.

Mr. HINSHAW. That is all.

Mr. DEROUNIAN. Mr. Chairman.

Mr. HALE. Mr. Derounian.

Mr. DEROUNIAN. Mr. Harris, do you know of your own knowledge whether or not since the fluoridation of the water has been in effect in your city that any deaths have resulted from it directly or indirectly, traceable to that?

Mr. WILLIAM L. HARRIS. No; I believe that the statistics will bear out that there has been no effect in the change from the water supply.

Mr. DEROUNIAN. I think someone in favor of this bill yesterday testified regarding the flaunting of public will, by claiming, if I am not mistaken, that in Grand Rapids they foisted this fluoridation on the public 6 years before the public voted on it. I think they said that it was publicly approved in 1944, yet it had been in effect since 1939. You have been in a position to know whether that is true or not?

Mr. WILLIAM L. HARRIS. Yes; I have been with the city of Grand Rapids since 1929 and I know definitely we were not approached about this matter until 1944 and in July 1944, the Grand Rapids city commission voted to enter into the study with four other groups: The United States Public Health Service, the Michigan Department of Health, and the University of Michigan dental school, and it required

about 6 months for us to get together the equipment and to start the actual application.

Mr. DEROUNIAN. From your own knowledge, have you seen any results of tests as to the effects on the teeth of children and the adults over a sustained period where they have made these studies?

Mr. WILLIAM L. HARRIS. You mean in the reduction of tooth decay?

Mr. DEROUNIAN. That is right.

Mr. WILLIAM L. HARRIS. Those have been published by the Michigan Department of Health and are contained in a statement of policy which has been issued by the Michigan Department of Health. I believe this statement along with some of the background has been entered in the proceedings by our health officer.

Mr. DEROUNIAN. Thank you.

Mr. BEAMER. Mr. Chairman.

Mr. HALE. Mr. Beamer.

Mr. BEAMER. Mr. Harris, I would like to ask you one brief question. The water supply for some cities, in some localities perhaps will have a certain amount of fluorine in it naturally?

Mr. WILLIAM L. HARRIS. Yes, they all have very small traces of fluorine. In the case of Lake Michigan water, it is seven hundredths of one part per million and we are raising it to over one part per million.

Mr. BEAMER. I was re-reading the very able testimony of your very able Congressman, Gerald Ford, who lives in Grand Rapids, before our committee 2 days ago. He referred to the city of Aurora, Ill., which I believe was indicated here had a natural amount of fluorine in the water that Grand Rapids does not have.

Mr. WILLIAM L. HARRIS. Yes.

Mr. BEAMER. That is your understanding?

Mr. WILLIAM L. HARRIS. Yes.

Mr. BEAMER. Now, across the State, only a short distance from Grand Rapids is Muskegon, which I understood does not have any fluoridation.

Mr. WILLIAM L. HARRIS. They did not have fluoridation of their water supply for several years.

Mr. BEAMER. They do now?

Mr. WILLIAM L. HARRIS. They do now.

Mr. BEAMER. In other words, it seems only fair from Congressman Ford's statement—and I presume that was brought out by the citizens of your community—that the people of Grand Rapids should have the same privilege to avail themselves of fluoridation, if they desire it, that the people of Aurora naturally receive from nature.

Mr. WILLIAM L. HARRIS. Yes, sir. And, of course, in Muskegon they availed themselves of that privilege and refused to go along further as a control for Grand Rapids. They wanted the same benefit for their children that the Grand Rapids people are getting.

Mr. BEAMER. Now, how much later did Muskegon do that?

Mr. WILLIAM L. HARRIS. I do not have the date, but I would assume that it would be about 4 years ago. They waited until definite results were available from Grand Rapids, showing that it had reduced tooth decay.

Mr. BEAMER. I think that is all. Thank you.

Mr. PELLY. Mr. Chairman.

Mr. HALE. Mr. Pelly.

Mr. PELLY. Mr. Harris, have you had occasion to observe the effect of this fluorine put into the water upon the pipes of the city?

Mr. WILLIAM L. HARRIS. Yes. There has been no effect on the distribution system.

Mr. PELLY. We had evidence presented showing an advertisement, stating that it would eat through metal. I was wondering if possibly enough time has elapsed to show the chemical reaction on the pipes themselves.

Mr. WILLIAM L. HARRIS. Well, this is our 10th year and there has been no damage, corrosive condition, by any testing which we can make. We do not expect to find any.

Mr. PELLY. Is there anything in the chemical, any chemical reaction that occurs in the pipe which might cause an undue amount of fluorine content in the water to suddenly occur? In other words, could it accumulate in the pipe and then suddenly a toxic or even a lethal dose come out of the pipe?

Mr. WILLIAM L. HARRIS. No. We followed the gradual piling up of the fluoride concentration in our water supply system immediately after adding the fluoride at our plant. We have a rather large distribution system. It contains over 400 miles of mains. It has 3 large reservoirs which can or could hold at that time 2 days' supply. By the time we got the water through all that system it took about 10 days.

Nevertheless, from that time on we have always been able to find the amount of fluoride at the end of the main, essentially the same, as that which we added. There was no buildup at any place.

Mr. PELLY. That is all.

Mr. HALE. Thank you very much.

STATEMENT OF GEORGE W. WELSH, CITY MANAGER, CITY OF GRAND RAPIDS, MICH.

Mr. HALE. Now, could we have the testimony of Mr. Welsh, the city manager of Grand Rapids?

Mr. WELSH. Yes, Mr. Chairman.

Mr. HALE. About how long will it take you, Mr. Welsh?

Mr. WELSH. Five minutes.

Mr. HALE. We have just about time to hear you.

Mr. WELSH. I just wanted to supplement Mr. Harris.

Mr. HALE. We have about sufficient time to hear you before we recess.

Mr. WELSH. And, I want to give you a little background.

Mr. HALE. You think that we should all drink fluoridated water?

Mr. WELSH. I am neither a doctor nor a scientist. I have had some 25 years of public service. I will give you a little background.

I served on the common council in my 10 years in the legislature; was speaker of the house of the Michigan Legislature; lieutenant governor of Michigan; came back during the depression and volunteered as city manager; later served 6 terms of 2 years each as mayor.

I was mayor when this matter was brought to us, and on the recommendation of the health authorities I recommended it to the city commission and, of course, have watched the progress ever since that time.

I think that Mr. Harris has covered the matter quite thoroughly and I would like merely to stress what the gentleman from Tennessee (Mr. Priest) stated.

During my term as mayor I served two terms as president of the United States Conference of Mayors. I succeeded Mayor LaGuardia, who served 8 years, and Mayor Kelly of Chicago, 2 years, and I presume most of you have had enough contact with the United States Conference of Mayors to know that we are rather jealous of our powers in local communities. I know that I would certainly resent having Congress say to the people of Grand Rapids, after 10 years of experience, that we can no longer do what we are now doing.

I think the gentleman from Tennessee (Mr. Priest) brought up a very pertinent point. If Congress has the right to profit, obviously it has the right to prescribe.

And, I would like to leave my testimony on just that one point.

There has been no agitation. Our people are satisfied with it. All of the testimony that you have heard and all of the facts that can be obtained show that it has been of benefit to our people and I know that, from the present demand for new schools, that it certainly has not hurt the birthrate in any way.

I think I will leave my testimony there.

Mr. HINSHAW. Mr. Chairman.

Mr. HALE. Mr. Hinshaw.

Mr. HINSHAW. I would like to ask the distinguished former lieutenant governor of Michigan what the obvious benefits from this fluoridation are. I think that is of great interest to the committee.

Mr. WELSH. I think you have had the testimony of these gentlemen, the scientists and the doctors. Our people are satisfied with it.

Mr. HINSHAW. Have you had a noticeable decrease in the rate of dental caries among children and adults?

Mr. WELSH. I am so informed that that is the case and I am also informed from statistics that there has been no harmful results.

There has been no increase in other categories of death rates.

Somebody asked the question about the birthrate. I know that it has not affected us. If it has, it has been on the multiple side.

Mr. HALE. Mr. Welsh, may I inquire, before you started this program of fluoridation, did you have any vote of the people? I presume there was a vote of the municipal officers who made the decision?

Mr. WELSH. The commission, the city commission voted on it.

Mr. HALE. What kind of a city charter have you?

Mr. WELSH. We have a commission-manager form—mayor and commission.

Mr. HALE. How many commissioners?

Mr. WELSH. Seven commissioners and the mayor.

Mr. HALE. And the fluoridation program was started by a vote of the seven commissioners?

Mr. WELSH. That is right. I recommended it to the commission on the recommendation of the Kent County Dental and Kent County Medical Societies; the University of Michigan Dental School, the Michigan Department of Health; the United States Public Health Service, and our own city physician and city health officer.

Mr. HALE. Has there been any popular referendum on the issue?

Mr. WELSH. No; there has never been any question about it.

Mr. HALE. I presume when each commissioner comes up for reelection, any particular voter could vote against a particular commissioner because he voted for fluoridation.

Mr. WELSH. Well, I think I am the only one left that was there when it was inaugurated. It is 10 years ago, and as you know, public officials come and go.

Mr. HALE. At any rate, there is no manifestation of popular displeasure?

Mr. WELSH. It has never been an issue. I think our papers, our health officials, our people in dental and health work generally are favorable to it.

Mr. HALE. And there has been no increase as far as you know in mortality from any other disease, common or uncommon?

Mr. WELSH. The statistics I have seen show there has been no increase.

I think the point Mr. Harris made was quite significant. We wanted Muskegon, which is 35 or 40 miles away from us and also gets its water from Lake Michigan, to be a controlled city and, after seeing our experience, they declined and insisted on getting the benefits themselves.

Mr. HALE. Thank you.

Mr. DEROUNIAN. Mr. Chairman, just one question of Mr. Welsh with respect to that "went." Did they "go" because they voted for fluoridation?

Mr. WELSH. No, sir; it has never been an issue.

Mr. DEROUNIAN. That is all.

Mr. HALE. Thank you very much, Mr. Welsh.

Mr. WELSH. Thank you.

Mr. HALE. This pamphlet entitled "Water Fluoridation Report of the Committee of St. Louis Medical Society" is submitted for the record.

(The pamphlet referred to is as follows:)

[Reprinted from pp. 124 to 142 of the February 1954 Missouri Medicine]

WATER FLUORIDATION

REPORT OF THE COMMITTEE OF THE ST. LOUIS MEDICAL SOCIETY SUMMARY

1. Fluorine is an element existing widely in food and water, varying in its concentration in the latter from traces to excessive amount. The fluoridation of a communal water supply entails only supplementing a deficient natural concentration. There is no way of proving by chemical test that the element, fluorine, exists in the same chemical combination in its natural concentration as results from its addition in whatever salt of fluorine is chosen. From chemical theory, however, and from all observed facts of its behavior, the inference is plain that the soluble fluoride ions are equally effective at a given concentration, however introduced.

2. There is an inverse relationship between the concentration of fluoride ion in the water supply, whether naturally occurring or the result of the supplement, and the incidence of dental caries. This has been proven by observation of inhabitants of many communities and is accepted widely by those who oppose fluoridation for reasons other than its effectiveness. The proper amount to be added as supplement for a given community is arrived at in recognition of the experience of dental caries in the school children, the naturally occurring concentration of fluoride ion in the water and the climatic conditions peculiar to that locality which influence the intake of water. The benefit to be expected can best be stated by members of the dental profession and local public health officials, and will be in proportion to the prefluoridation caries experience of that community. While fluoridation importantly reduces the incidence of caries, it does

not completely eliminate it and does not diminish the need for adequate diet, mouth hygiene and dental inspection at proper intervals. While fluoridation begins to show its effects in a year or two in school children, the maximum benefit is seen in those persons using fluoridated water from birth. The increased resistance to caries extends at least into middle life, hence it is incorrect to assert that only children are benefited by such a program.

3. At the levels of intake supplied in fluoridation programs, there is practically no storage of fluorine except in the teeth. The ideal daily amount is about one milligram in temperate or predominately cool climates and would be obtained by drinking 1 quart of water containing 1 part per million of fluoride ion. Storage elsewhere in the body has not been demonstrated with daily intakes of as much as 3 or 4 times that amount. Storage in bone apparently occurs with daily intakes substantially above 4 mg., though without demonstrable ill effect on persons who have lived all their lives with a water supply containing 8 parts per million of fluoride. A wide margin of safety is thus provided, inasmuch as intakes of fluorine about 50 percent above the ideal dose produce very mild evidences in the appearance of the teeth of such excess. These dental warnings are detectable only by expert examination and are in no way harmful to the teeth. There is no published record of any injury to the health of any person drinking natural fluoridated water with a concentration as high as 8 parts per million, nor of harmful effects at such lesser concentrations as occur naturally or are provided in fluoridation programs. No injurious effects can be found in the study of vital statistics of all the common major diseases, including cancer, or in the statistics of maternal and newborn death rates. Experimental studies on man—the most sensitive species—and lower animals confirm these evidences of the safety of a fluoridation program. Physicians practicing in areas which have had fluoridation programs for three years or more report that their experience in the treatment of the sick does not differ from their prefluoridation practices and that they do not forbid the use of fluoridated water in any case.

4. The public health and water engineering practices are relatively simple. They include selection of the most desirable compound of fluorine to be used, provision for safety measures for handlers of such chemicals, installation of feeding equipment and regular performance of chemical tests at various points in the distributing system in order to regulate the desired concentration. Annual cost in most communities has varied between 9 and 14 cents per capita.

5. An impressive roster of persons and organizations of recognized scientific standing has endorsed the efficacy and safety of fluoridation. Over 3,000,000 persons live in areas whose natural water supplies contain from 0 to 5 parts per million of fluorine. Testimony has been furnished from the physicians of 12 communities with a combined population of nearly 800,000 persons who had fluoridation programs for from 3 to 7 years as of January 1, 1953. As of August 1, 1953, 772 communities in 43 states, including 10 major cities, have fluoridation programs serving a total population of 14,000,000 persons. In the United States, such widespread adoption of any program of preventive medicine, determined upon at the local level has profound significance as to the solid merit of the proposal.

6. Testimony in opposition to fluoridation has been expressed by a numerically tiny minority of persons of undoubted scientific training and experience in relevant fields. Close examination of their testimony reveals that they do not usually question the effectiveness of the procedure but have reservations as to possible toxic effects. They do not lay down criteria by which they would judge a fluoridation program to be any safter than it has already been shown to be. In requiring an indefinite prolongation of presently established programs before extension to other areas they tend to disregard what has already been learned. There is also an active, proselyting opposition that does not represent an objective, scientific point of view at all. It seeks to defeat proposals for fluoridation by the circulation of pamphlets containing obsolete or discredited or irrelevant charges ranging from "Operation Rat Poison" to "communistic plot" themes, with a measure of food faddism for good measure. There is no authoritative expression of opposition from any religious sect nor from the representatives of any school of healing the sick which is recognized by law in Missouri.

7. There are no practicable alternatives to fluoridation of water in a city such as St. Louis. The provision of fluorine intake through tablets, milk, salt or other means has profound disadvantages peculiar to each one. Topical fluoride application directly to the teeth by skilled personnel cannot be applied universally as a public-health measure for the prevention of dental caries, insofar as it is effective, due to lack of personnel and funds. While somewhat less effective

than fluoridation of the water supply, it has merit as an alternative public health measure in small communities without such a common source of water.

8. The use of water containing the recommended concentration of fluorine has been shown to be without hazard in the industrial use of water. There is testimony to this effect by research chemists of the associations of brewers, bakers, and bottlers as well as by use of naturally fluoridated waters in earlier times without dissatisfaction. Such fears as have occasionally been expressed have not been documented and appear to be contrary to observed fact. There has been no recorded, open opposition to this measure of preventive medicine from any industry, nor is any to be anticipated in the future.

9. The power of a municipality, acting through its elected representatives, to initiate fluoridation of its water supply by legislative action has been upheld wherever challenged in court. Such a procedure is held to be proper exercise of police power of a community to conserve or improve the health of its residents. A fluoridation program does not treat caries already present. It is effective in increasing the resistance of the developing tooth to the occurrence of caries. "Preventive medicine" is an obviously more accurate description of its purpose and effect than is "Mass medication," usually introduced acrimoniously.

10. No other public-health measure has had more thorough study prior to adoption than the proposal for fluoridation of the community water supply whose natural concentration of fluorine is deficient. The ideal concentration of fluoride ion to be delivered at the outlets should be decided by the responsible public officials after study of current information, particularly of climatic effects, and after such consultation with other authorities as they deem necessary. Continued studies and periodic reporting of the caries experience of selected groups of children, as done at present in St. Louis, together with careful scrutiny for incipient signs of dental effects of excessive fluorine ingestion should be carried out as an essential feature of such a program.

Recommendation

The members of the water fluoridation committee of the St. Louis Medical Society unanimously recommend that the elected officials of the City of St. Louis undertake without delay the necessary legislative and administrative steps to authorize and initiate a program to increase the content of fluorine of the municipal water supply to an amount whose concentration will provide maximum reduction in the incidence of dental caries of the children of St. Louis commensurate with freedom from objectionable cosmetic effects or hazard to health of the residents as a whole.

This recommendation is made in the conviction that such a step will contribute the most significant contribution to the public health of the community since the enactment and implementation of the smoke abatement ordinance.

(S) HAROLD A. BULGER, M.D.
RAYMOND O. MUETHER, M.D.
WILLIAM BARTLETT, M.D., Chairman.

August 24, 1953

Study

The pathways by which the human body absorbs the fluoride ion in ideal dosage and rids itself of all but a small fraction are well understood. It is essential that one comprehend these mechanisms for with knowledge as a foundation, the facts and fallacies involved in programs for the fluoridation of a water supply lose much of their mystery for the lay student. Definition of the ideal daily dose is the first step. In medical terms, it is the physiologic dose. As with many other substances having valuable properties when administered in a properly prescribed daily amount, fluorine becomes a harmful, rather than a beneficial agent when given in excessive, or toxic, quantities. This is equally true of iodine, bromine and chlorine, the other members of the family of chemical substances known as the halogens. They are widely distributed in animal and plant life and most naturally occurring water contain them in varying concentrations. In physiologic concentration, for example, chlorine combines with sodium to form the largest portion of the salts in solution in the blood itself. In a different combination and concentration, it exists as the hydrochloric acid which is the principal chemical agent in digestion of food in the stomach; it is administered by mouth throughout a lifetime to patients whose own digestive juices are deficient. In still other concentrations and chemical combinations chlorine is used to prevent the growth of harmful germs in water supplies and, in murderous form, it is the principle component of war gas. Common table salt

is the same chemical substance as the sodium chloride in solution in the blood and tissue juices, yet excessive intake of salt, or no intake of salt, produces grave illnesses; the same statement is true of excessive or inadequate intake of water alone, yet water makes up about 70 percent of the weight of the human body.

In considering the effects upon the human body of a given element, therefore, one must define not only the chemical compound itself, but the concentration in which it is to be delivered, the total daily dose and the period of time over which it is to be administered. For the fluoride ion the ideal, or physiologic, dosage is approximately 1 milligram (mg.) per day which is achieved by the human utilization of drinking water and water used for cooking from a source containing an average concentration of 1 part of fluoride ion per million parts of water (1 ppm). This intake of fluoride is calculated as a proper addition to the small amount contained in various solid foods. The needs of the body for water are fixed by nature and, although habitual intakes of drinking water, or of substances dissolved in water, vary widely with the individual, the differences are not significant in altering importantly the effects upon the human body of these small quantities of fluorine. Since few naturally occurring waters are completely free of fluorine, one should always think of a fluoridation program, not as addition of a substance foreign to the water, but as a process of supplementing an inadequate concentration. In many communities in the Southwestern States programs of defluoridation have been instituted in order to remove an undesirable excess of fluorine and to lower its concentration, not to zero, but to physiologic levels. It must be understood, moreover, that it makes no demonstrable difference to the human body whether the ideal concentration of fluoride in its water supply has been achieved naturally, by supplement or by defluoridation. Whatever chemical combination of fluorine, the element, is dissolved in water as fluoride ion and is measurable by standard tests is capable of absorption by the body (1, 2, 67).

Fluorine is properly considered to be one of the trace elements normally present in very small amounts in the human body. Its usefulness in increasing the resistance of the teeth to decay (dental caries) has only become obvious in recent years and will be elaborated subsequently. In physiologic dosage, very small amounts of fluoride are stored in the enamel of the teeth of infants and children before hardening of the enamel is completed and particularly before the permanent teeth have erupted into the mouth. In physiologic dosage, storage of fluoride ion elsewhere in the body has not been demonstrated. The remainder is passed (excreted) from the body in the urine, sweat and feces (2, 3, 4). There is, as yet, no other known beneficial role which such small quantities of fluorine play in the human economy. The ideal, or physiologic, dosage of fluorine is therefore that amount, in the concentration and quantity already described, which will importantly reduce the incidence of dental caries and which will not produce undesirable effects. In temperate climates the year-round ideal concentration in a water supply has previously been stated to be 1 p. p. m. The permissible upper limit has been set as 1.5 p. p. m., (5) for with even moderately higher concentrations of fluorine no considerable added protection against dental caries is seen (6) and an undesirable cosmetic phenomena fluorosis (noticeable brownish mottling of the enamel), begins to appear in a small percentage of people. No documented instance of damage to health has been recorded from the use of water containing the physiologic dosage of fluorine, whether naturally occurring or supplemented, no matter over how long a period (4, 7, 8).

It has already been stated that variations in the total daily intake of properly fluoridated water do not produce important alterations in physiologic effects. This needs qualification, for seasonal concentrations should be related to the ideal, year-round concentration of 0.9 to 1.5 p. p. m. of fluoride ion for a temperate climate. Climate plays a part in determining the total fluid intake of the population. It is important to remember that about 90 percent of the weight of a solid, general diet lies in its water content and added liquid is drunk to make up the body's need for total daily water intake; water is made available by the body for the formation of urine only after all the other needs for water, including the formation of sweat, has been met. In warm, humid periods of the year the need for water is increased and it has therefore been the logical practice in communities with a fluoridation program to reduce the amount of fluoride added to the water supply in order to produce a concentration at the outlets of as little as 0.6 p. p. m. under such climatic conditions, raising the latter to 1 p. p. m. or slightly higher during cool weather (9, 10).

Allusion has been made to the fact that with increasing concentrations of fluoride ion cosmetically undesirable mottling of the enamel appears in increasing percentages of children who have been on such an intake from infancy. This is noticeable to the untrained observer and persists throughout the lifetime of the individual; no harm to the structure of the tooth is involved. Such grossly noticeable mottling does not occur with ideal concentrations which are appropriately adjusted downward in spells of hot weather. Under these circumstances, less than 15 percent of children at ages 12 to 14 years develop a very faint change in color of the enamel, localized on various surfaces of the teeth and detectable only to the trained observer using instruments and special illumination (7). There is, therefore, no cosmetic hazard with physiologic conditions of fluoridation, natural or planned.

The warning sign that the ideal daily intake is being exceeded lies precisely in the appearance of dental fluorosis, mottling of the enamel, as concentrations of fluoride ion in the water supply are increased. The large margin of safety is apparent when one reviews the incontrovertible evidence that water containing 8 p. p. m. has been the only source of supply for the community of Bartlett, Tex., during several generations without detectable evidence of injury to health upon searching scrutiny of the population (11). Aside from mottling of the teeth, increased bone density in X-ray examination in 11 percent of the persons examined was the only deleterious effect found; it was not associated with symptoms and constituted the only way except for dental effects in which these people were found to differ from the inhabitants of a neighboring community with inadequate amounts of fluorine in the water supply. Completely reliable data (12) reveal that water naturally containing 1.0 to 1.5 p. p. m. is used by more than one million people. Water containing 1.6 to 2 p. p. m. is used by more than 900,000 persons. Water containing 2.1 to 3 p. p. m. is used by more than 600,000 persons. Water containing 3.1 to 5 p. p. m. is used by more than 100,000 persons. Water containing more than 5.1 p. p. m. is used by 40,000 persons. A total of 3,000,000 persons in the United States, then, have for many years been using water naturally containing fluoride ion in concentrations, variously, between 0.9 and 5 p. p. m. and in none of them has an authentic case of injury to health attributable to the fluorine concentration been reported in the vast medical literature. The reasons why none is to be anticipated, even at these concentrations of as much as five times the ideal daily dosage, will be elaborated.

Before proceeding to comment on the published studies that have demonstrated the absence of a hazard to health in the use of water containing fluorine in concentrations even higher than the ideal, let us recapitulate briefly the observed facts presented hitherto for consideration:

1. The discussion of the effects upon health of any waterborne element must define (*a*) the chemical combination in which it is to be employed, (*b*) the total daily dosage, (*c*) the concentration to which it will be diluted upon delivery at the tap, and (*d*) the period over which it is to be consumed.

2. The ideal, or physiologic, daily dose of any substance is that amount which will produce the desired beneficial effect in a reasonable percentage of instances without doing harm.

3. The physiologic dose of the fluoride ion, judged from the point of view of its dental effects, is approximately 1 milligram daily. This is attained in temperate climates by drink water which has naturally a concentration of about 1 part per million of fluoride or to which fluorine has been added to approximate that concentration in communities where the water supply contains less than the ideal amount.

4. In physiologic dosage, fluorine is not stored in the body except for that very small amount that enters into the process of hardening the enamel of the developing teeth. The remainder is lost to the body, principally in the urine.

5. No evidence of injury to the well-being of any person, sick or well, infant or aged, has been related to fluorine present in water in physiologic concentration.

6. The teeth of persons receiving water containing physiologic concentrations of fluoride, properly adjusted to local climatic conditions, do not show discoloration.

7. At concentrations fluoride rising above 1.5 p. p. m. visible mottling of the teeth is observed with increasing frequency. This is undesirable from the cosmetic viewpoint.

8. The appearance of mottling detectable only by a trained observer in more than 10 percent of children is an indication that physiologic doses are being exceeded.

9. The margin of safety with concentrations of fluoride higher than ideal is so wide, that no sign of ill effects has been detectable by close scrutiny even of the members of one community using a water supply containing 8 p. p. m. for several generations. Over 3 million persons in the United States live in communities where the natural concentration of fluoride in the respective water supplies is, variously, from 0.9 to 5 p. p. m. There is no medical record to show that, aside from relative freedom from dental caries, their health differs from that of persons dependent upon water containing less than ideal amounts of fluorine.

10. No distinction is to be made between the effects on the human body of fluoride ion naturally occurring in a water supply and the same concentration of fluoride attained by either supplementation or defluoridation.

It is not surprising that relatively few organized investigations of the health of persons living in communities whose water supplies have a physiologic concentration of fluorine, either naturally or by supplement, have appeared in the medical literature. Such inquiries into the possibly toxic effects of any substance in the natural water supply employed by a population are prompted either by (1) reports of damage to health in individual cases or (2) the publication of reports of laboratory studies on animals and human volunteers indicating that the behavior of the substance in the body under applicable conditions is such as to make it likely that evidence of injury to health in specific ways may appear and should be sought. In the total absence of such clinical or laboratory reports of health hazards with respect to ideally fluoridated water, few community health departs have found themselves so plentifully supplied with the taxpayer's money that they could divert funds and personnel to looking for trouble where none was to be anticipated. Such an effort is a luxury, comparatively, in view of the urgent needs and limited sums with which all departments of health and sanitation are chronically faced. The conscientious and highly trained members of Federal, State, and local public health professional associations study critically the investigations in their field and do not lightly or carelessly endorse proposals for preventive measures whose conceivable harm might outweigh the benefits. As will be brought out, there is a still larger body of published evidence as to the safety of drinking water containing higher than physiologic concentrations of fluoride and this has been the logical field for the most intensive study of the problem. Let us examine, then, the reports which bear on the safety to the consumer of drinking water containing fluoride ion in concentrations of up to approximately 5 parts per million.

The city of Newburgh, N. Y., was one of the first communities in this country to add fluorine (as sodium fluoride) to its natural water supply (1945) bringing up the concentration from 0.1 ppm to 1 ppm. Systematic continuing examinations of schoolchildren have been reported in respect to general physical examination, analyses of blood and urine, X-rays of the bones of the hands, forearms and legs and special eye and ear examinations in selected samples; detailed dental records have also been kept for comparison with the prefluoridation data obtained in Newburgh and in neighboring Kingston, N. Y., which had a similarly meager concentration of fluorine and from which fluorine supplement has been withheld for the sake of comparison. These studies have been carried out in conjunction with the New York State Department of Public Health. As reported in 1950 (13) and again in 1952, we read: "Careful examinations carried on since the study started reveal absolutely no harmful effects from drinking fluoridated water" (14). Herman E. Hilliboe, M. D., commissioner, New York State Department of Health, adds "These results bear out studies made in other areas of the country, where persons have been drinking naturally fluoridated water all of their lives with utmost safety" (14). No differences (other than dental) in the physical condition of the children of Newburgh and Kingston have been found; the dental benefits will be reviewed separately. The Evanston, Ill., dental caries study group has also carried on regular examination of the school children since that community began to supplement (to 1 ppm) the negligible quantities of fluorine in its water supply in 1947. In a letter (15) dated March 9, 1953, Winston H. Tucker, M. D., commissioner of health of Evanston, writes: "No detrimental effects of any sort have been found in the children on careful examination. I am not aware of any evidence published in medical literature showing that there is an increase of any disease which could be attributed to fluorine in a concentration of one part per million in a public drinking water supply."

Studies on a somewhat older age group have been made by McClure (then senior biochemist, National Institutes of Health, Bethesda, Md.). He has reported (16) observations of height and weight and the incidence of bone

fractures in 1,458 high school boys residing in communities whose water supplies varied from zero to 1 ppm fluorine content. There is no correlation of the fluorine content of the water with growth and development or with the experiences of fractures of bones, as is evident in tables I and II.

The examination of vital statistics for any community is a standard method of finding clues as to the possible relationship between a given disease and a suspected agent, causative, contributory or complicating. From a series of published data (17, 18, 19, 20, 21) table III has been prepared. It demonstrates beyond dispute the lack of any regular pattern of relationship between death rates from all cancers and the fluoride content of the water (varying from zero to 4.5 ppm) in several communities. In table IV is evident the same lack of correlation between the periods of survival of sufferers from several types of cancer and the fluoride content of the water in San Francisco, which had little or no fluorine, and in Denver, which has 1.2 ppm (17, 18).

Tables V and VI (22) reveal the relationship of deaths of pregnant women and of babies before and after birth to the fluorine content of the water in several Wisconsin communities during 2 successive 5-year periods. The well recognized stresses of pregnancy and the sensitiveness of the developing fetus to changes in its environment could be expected to reflect toxicity if any such existed in the water supply. Yet there is no important or consistent difference in the frequency of deaths at term (still birth), immediately after delivery (neonatal), during the first year of life (infant) nor in the mothers themselves in the cities whose water supplies contain from 0.03 p. p. m. to 2.5 p. p. m. of fluorine. Nor is there any significant alteration of these patterns in the city of Sheboygan during the 5-year period following the raising of its fluoride concentration from 0.03 p. p. m. to 1.2 p. p. m.

Fears are often expressed that even physiologic concentrations of waterborne fluorine may have an adverse effect upon sufferers from certain organic diseases. In tables VII and VIII (22) appear the vital statistics from these same Wisconsin communities over the same successive 5-year period, 1940–44 and 1945–49. The frequency of the following disorders are reported: health diseases, cancer, cerebral hemorrhage (stroke), nephritis (degenerative diseases of the kidneys), pneumonia, diabetes, tuberculosis, influenza, and appendicitis. The utter lack of correlation between the members of deaths from any of these diseases and the naturally occurring fluorine content of the respective municipal water supplies is obvious, including the comparison of pre- and post-fluoridation data in Sheboygan. The Commission of Public Health of Sheboygan, G. C. Hildebrand, M. D., advises: "I am enclosing a chart giving the number of deaths of the more common causes of death. There is nothing in our statistics in the last ten years to indicate that fluoridation has had any adverse effects on the health of the people of this community" (23).

TABLE I.—*Comparison of the height and weight of 1,458 high school boys, ages 15 to 17 years, residing in cities with different concentrations of fluoride in public water supplies—Source (16)*

	Fluoride (parts per million)	Height	Weight		Fluoride (parts per million)	Height	Weight
Galesburg and Monmouth, Ill.	1.8	67.2	135.6	Quincy, Ill.	0.1	67.2	134.2
Aurora, Ill.	1.2	66.7	136.5	Waukegan, Ill.	.0	67.4	135.8
Elgin, Ill.	.5	68.0	136.1	Washington, D. C.	.0	68.4	140.0

TABLE II.—*Comparison of bone-fracture experience of 1,458 high school boys, ages 15 to 17 years, residing in cities with different concentrations of fluoride in public water supplies—Source (16)*

	Fluorine (parts per million) in water	Total number of bone fractures per 100 boys		Fluorine (parts per million) in water	Total number of bone fractures per 100 boys
Galesburg	1.9	27.0	Quincy	0.1	21.3
Monmouth	1.7	31.0	Waukegan	0	25.0
Aurora	1.2	25.3	Washington, D. C	0	32.4
Elgin	.5	24.3			

TABLE III.—*Comparison of cancer mortality rate per 100,000 in areas with different concentrations of fluoride in the public water supplies—Source (19), (17), (18), (20) and (21).*

		Mortality rate
Texas:		
Cities having little or no fluoride (1948-49)		91
Nacogdoches, Tyler, Abilene, Stephensville	Total population, 105,334	
Cities having 3 to 4.5 parts per million fluoride (1948–49)		81
Lamera, Lubbock, Plainview, Amarillo	Total population, 163,382	
Wisconsin:		
Stevens Point little or no fluoride (1945–49)		136
Population 16,550		
Green Bay, 2.6 parts per million fluoride (1945–49)		131
Population 52,443		
Sheboygan, population 40,638:		
Little or no fluoride (1940–44)		148
After fluoridation (1945–49)		138
Colorado, California:		
San Francisco little or no fluoride	1938	151
Population 1,131,119	1947	149
Denver 1.2 parts per million fluoride	1939	137
Population 316,124	1947	132

TABLE IV.—*Comparison of survival rates of different types of cancer 12 months after microscopic diagnosis, expressed as percent survival—Source (17) and (18)*

	San Francisco, little or no fluoride	Denver 1.2 parts per million		San Francisco, little or no fluoride	Denver 1.2 parts per million
	Percent	*Percent*		*Percent*	*Percent*
Cancer, all types	70	66	Cancer of breast	44	39
Cancer of stomach	34	33	Cancer of uterus	83	78
Cancer of lungs and bronchii	16	20	Leukemia	32	38
			Lymphomas	58	62

TABLE V.—*Comparison of deaths related to pregnancy in cities with different concentrations of fluoride in the public water supplies, 1940 through 1944—Source (22)*

	Green Bay 2.5 parts per million	Fond du Lac 0.5 parts per million	Sheboygan 0.03 parts per million
Death rate (per 1,000 population)	9.1	12.1	10.0
Still birth rate (per 1,000 live births)	22.5	20.7	24.0
Neonatal rate (per 1,000 live births)	25.1	22.7	22.4

TABLE VI.—*Comparisons of death related to pregnancy in cities with different concentrations of fluoride in the public water supplies, 1945 through 1949—Source (22)*

	Green Bay, 2.5 parts per million	Stevens Point, 0.2 parts per million	Sheboygan, 1.2 parts per million	Sheboygan, 0.03 parts per million [1]
Death rate (per 1,000 population)	9.1	9.0	9.7	10.0
Stillbirth rate (per 1,000 live births)	17.5	15.0	19.1	24.1
Neonatal rate (per 1,000 live births)	24.6	32.0	22.7	22.4
Maternal rate (per 1,000 live births)	.7	2.6	1.1	1.7
Infant rate (per 1,000 live births)	33.6	46.4	30.8	30.9

[1] Before fluoridation (1940–44).

TABLE VII.—*Comparison of death rate of some representative diseases in cities with different concentrations of fluoride in the public water supplies, 1940 through 1944—Source (22)*

	Green Bay 2.5 ppm	Fond du Lac 0.5	Sheboygan 0.03
Leading causes of death (rates per 100,000 population):			
Heart disease	307.6	360.9	311.0
Cancer	127.2	195.5	148.1
Cerebral hemmorrhage	93.9	130.8	97.9
Nephritis	51.0	114.7	41.3
Pneumonia	27.7	28.7	28.5
Diabetes	34.6	38.2	32.5
Tuberculosis	17.7	19.8	32.5
Influenza	17.7	6.6	8.4
Appendicitis	12.5	5.1	4.4

TABLE VIII.—*Comparison of death rate of some representative diseases in cities with different concentrations of fluoride in the public water supplies, 1945 through 1949—Source (22)*

	Green Bay 2.5 parts per million	Stevens Point 0.02 parts per million	Sheboygan 1.2 parts per million	Sheboygan 0.03 parts per million [1]
Leading causes of death:				
Heart	279.7	298.5	340.9	311.0
Cancer	131.6	136.2	137.7	148.1
Cerebral hemorrhage	103.3	77.0	124.2	97.9
Nephritis	28.7	32.0	21.7	41.3
Pneumonia	19.0	33.2	23.9	28.5
Diabetes	20.9	34.3	24.4	32.5
Tuberculosis	7.8	14.2	19.4	32.5
Influenza	8.2	2.4	4.5	8.4
Appendicitis	5.2	3.6	2.3	4.4

[1] Before fluoridation (1940–44).

TABLE VIII.—*Comparison of death rate of some representative diseases in cities with different concentrations of fluoride in the public water supplies, 1945 through 1949—Source* (22)—Continued

TABLE IX

	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950
Infant death rate (per 1,000 live births)	28.2	25.5	30.8	32.4	36.0	31.6	23.6	19.4	20.1	17.9
Death rates (per 100,000 population):										
Heart disease	367	390	477	430	472	395	403	428	377	404
Nephritis	50	57	68	57	77	51	52	47	38	11
Intracranial lesions	120	118	139	131	149	143	111	104	101	150

The addition of sodium fluoride to the water supply of Grand Rapids, Michigan, was initiated on January 25, 1945. Only a trace (0.1 p. p. m.) of naturally occurring fluorine was previously present in the water obtained from Lake Michigan and the concentration is now supplemented to 1.0 p. p. m. Table IX has been prepared from vital statistics of 1941–1950 furnished (24) by W. B. Prothro, M. D., Public Health Director of Grand Rapids, and sets forth the infant death rate and the death rates due to heart disease, nephritis and intracranial lesions (including brain tumors, strokes and other disorders arising within the skull).

In comment, Dr. Prothro writes: "We have not observed any significant change in the vital statistics of Grand Rapids since the inception of our fluoridation program." Dr. C. V. Tossy, Associate Chief of the Public Health Dentistry Section, Michigan Department of Health, remarks: "Vital statistics in Grand Rapids have been studied in comparison with the rest of the State, and there are no differences that could be attributed to fluoridation of the water. There have been no adverse effects of any kind noted" (25).

The City of Janesville, Wis., whose water supply was naturally free of fluorine, started the addition of sodium fluoride in the proportion of 1 p. p. m. on July 26, 1948. Fred B. Welch, M. D., the City Health Commissioner, writes: "An evaluation of our vital statistics show no adverse effects have been noted with regard to chronic diseases of the kidneys, circulatory system or cancer and diabetes mellitus" (26).

Additional information of value has been received in response to inquiry directed to the president of the local medical society (27) and to the community health officer (28), respectively, of each of 15 cities of more than 10,000 population which has had a water fluoridation program in effect more than 3 years (initiated before January 1, 1950). The substance of the questions to the practicing physicians is (1) "Do you notice any change in the course of certain diseases since fluoridation was started?" and (2) "Do any of your local physicians forbid the use of the fluoridated water in treating such patients?" The diseases specified were cancer, diabetes and inflammatory or degenerative diseases of the circulatory system and of the kidneys. The second question was repeated in the query to the district health officers, along with a request for current information on vital statistics and dental results. We failed to receive answers to these two questions from three of the communities. The replies from 12 (15, 23, 24, 26, 29), 4 of which have been quoted verbatim, are unequivocally in the negative. There is no dissatisfaction or concern reported among the physicians in the communities in which fluoride supplement up to physiologic concentration has now been added for from 3 to 8 years. No physician in these communities is reported to forbid the use of water from the municipal supply and substitute water from another source. This is not offered as scientific evidence but as proof of the attitude of the physicians who treat the sick of these 12 cities whose total population exceeds 785,000 persons, according to the United States census of 1950.

Returning to consideration of areas in which the natural concentration of fluorine in water equals or exceeds the ideal figure of approximately 1 p. p. m., it has already been stated that more than three million persons have used such concentrations (up to 5 p. p. m.) all their lives without reported ill effects on health (12). It is probable that analyses in other areas will make this number larger, as a recent report (30) from Iowa indicates that a considerable percentage of people in that State are using water containing physiologic, or higher, concentrations of fluorine. Evidently, the physiologic daily dose must

be exceeded severalfold for very prolonged periods before storage of fluorides in bone becomes detectable to X-ray examination. This condition of "bone fluorosis" is the next detectable sign after dental fluorosis (mottling) that ideal intakes are being grossly exceeded. Its existence has not been demonstrated in persons receiving up to five times the amounts from natural sources or by any artificial fluoridation program. An X-ray survey of 31 inhabitants of Bureau, Ill., residents of that community for from 18 to 68 years, and using a water supply providing 2.5 p. p. m. of fluoride, revealed none of the hardening of the bones that characterizes fluorosis. A study (31) by the same authors of 86 inhabitants of Kempton, Ill., where the content of fluorine in water varies from 1.5 to 3.0 p. p. m. also failed to show fluorosis of bone. At a much larger intake (8 p. p. m.) a survey (11) already cited, was made by a team consisting of 3 physicians, 3 nurses and 1 dentist in the community of Bartlett, Tex. Complete physical examinations, medical history, urinalysis, blood counts and X-rays of bone were made on everyone resident there for more than 15 years. Over 3000 X-rays were taken and were submitted to the specialists in two well-known clinics for interpretation. From one consultant came the opinion that in 12 percent of the individuals over 50 years of age in a minor degree of change in bone structure was present but was without clinical significance. In the neighboring town of Cameron, with three times the population, the same study was made on 1 out of 3 persons. Although the concentration of fluorine in the water in Cameron was only 0.3 p. p. m. almost identically that of St. Louis, no evidence was developed to show that the residents of either community were healthier in any way than those of the other. Mottling of the teeth, of course, was common and caries infrequent in the people of Bartlett, in comparison with those living in Cameron.

It is outside the range of our purpose to review the chronic toxic effects that appear with still higher intakes of fluoride. These are seen in industrial poisoning and usually involve intakes by breathing dust-born fluoride in enormously higher amounts than those defined as appropriate to a water fluoridation project. It has been shown that with daily intakes up to 5 mg. of fluorine (five times the ideal dose) excretion by urine, sweat and feces keeps up with intake, (2) only a small fraction being taken up by the teeth. The concentration of fluoride in the urine becomes, therefore, a good indication of the intake until toxic doses are reached and urinary output lags behind bone storage of fluorine. Therefore, some idea of the magnitude of the intake of those industrial workers who have shown X-ray evidence of bone fluorosis, both with and without symptoms, is revealed in their average reported urinary concentration of 16 p. p. m. in one study (32) and of 10 p. p. m. or more in another (33).

We have, therefore, examined the data submitted by direct medical study of persons using fluorine in physiologic, or larger, concentration in the water supply and the comparative vital statistics revealing incidence of a variety of diseases in communities whose waters bear various concentrations of fluorine, both above and below the ideal level. A third method of determining the effects of fluorine within a restricted range of daily dosage is that involving the experimental feeding to humans and to animals. We have cited twice the study made by McClure (2) and Mitchell (professor of animal nutrition, University of Illinois) and coworkers. They fed to five healthy young men a diet supplemented by fluorine in various forms at different doses up to 6 mg. per day over periods of 21 to 26 weeks. Chemical analyses of all food and fluid and of all excreta (urine, sweat, and feces) were made at intervals for fluorine content, hence a most thorough and critical "balance study" was carried out. Four of their important findings and conclusions will be quoted directly:

(1) "The elimination of absorbed fluorine via the urine and perspiration is practically complete when the quantities absorbed do not exceed 4.0 to 5.0 mg. daily" (2). "The proportion of fluorine excreted by the kidneys fell during periods of higher environmental temperature and the proportion excreted in the sweat rose under these circumstances" (3). "There was no significant retention of fluorine in the bodies of these young adult men when total daily fluorine ingested did not exceed 4.0 to 5.0 mg. daily. The data suggest that these may be the limits of fluorine which may be ingested daily without an appreciable hazard of body storage of fluorine" (4). "The consistent evidence of practically complete fluorine equilibrium in these human subjects would seem to indicate also that exposure to domestic waters, such as Galesburg, Ill., drinking water containing 1.8 to 1.9 p. p. m. fluorine, or any drinking water which contributes an average of not more than 3.0 to 4.0 mg. fluorine to the ingesta (total intake of fluids

and solids) is not liable to create a public health hazard of cumulative toxic fluorosis." Four of their five subjects were carefully examined at the end of the study period for signs of possible injury to health. Complete physical examinations, blood counts and smears, urinalysis, dental examination and X-ray of the teeth were not revealing. There was no inflammation of the skin to indicate irritation from the unusually high amounts of fluorine in the sweat.

The findings of McClure and Mitchell substantiated earlier balance studies by Machle and Largent (3) in 1943, although the latter reported storage at total daily intakes of 6 mg. Failure of Machle and Largent to measure the fluorine content of sweat may account for such discrepancy between intake and output at these comparatively large intakes. The results of these exhaustive balance studies are such as to let us say with confidence that we know enough of the means by which the body disposes of fluorine at levels of daily intake up to 5 mg. to predict that intakes of the order of 1 mg. daily over however long a period will not cause injury to health.

A very large body of research is reported on experimental animals fed fluorine in various chemical combinations in a considerable dosage range. While research on a member of one species cannot necessarily be applied to those of another species (including man), certain observations as to margins of safety and variations in absorption of different chemical compounds of fluorine are of interest, particularly in considering certain objections to the fluoridation of water. In experiments on rats, Roholm (35) found that a dose of 1 mg. of fluoride ion per kilo (2.2 pounds) daily would induce incipient mottling of the enamel; the comparable intake for a man weighing 154 pounds would be 1 quart of water daily with a concentration of 70 p. p. m. Five times this amount would cause bone fluorosis; 10 times the original dose (or the equivalent of 1 quart of water daily, with a concentration of 700 p. p. m.) regularly causes signs of ill health. Largent fed 65 mg. of fluorine (as sodium fluoride) daily to 2 dogs from the age of 11 months. After 5½ years the animals were sacrificed and no noteworthy changes were found upon microscopic examination of the organs or bones; during life no changes in the bones detectable by X-ray examination developed (36). In evaluating such a report, one must take into account the fact that a corresponding daily dose for a man would be enormously larger than the 1 mg. amount considered ideal for dental purposes. Similar studies have been carried through several generations of dogs without discernible effects on their health, yet, it must be repeated, sensitiveness of different species to the effects of fluorine differ sufficiently that literal application of data on dosage cannot safely be carried over from one species to another.

Important differences in the absorption from the intestine of fluorine, depending upon the form in which it is ingested, was brought out in the publication (37) by Greenwood in 1946. He fed fluorine in a dosage of 5 mg. per kilo (2.2 pounds) to puppies as sodium fluoride, as bone meal and as defluorinated phosphate. It was noted that dental fluorosis appeared in the puppies receiving sodium fluoride, but not in those receiving the same quantity of fluorine in the other forms, an indication that fluoride ion in bone metal and in defluorinated phosphate is less readily absorbed from the intestine than is sodium fluoride. Jackson came to the same conclusion and reported (38) his feeding experiments on immature and adult rats, showing conclusively that the concentrations of fluorine differs considerably in different bone meals and cooked bone, depending both upon their origin and particle size. Jackson demonstrated the variability of absorption from the intestine of fluorine in bone meals due to these and to other factors and cited other investigations in animal and human feeding experiments to the same point. One of McClure's (2) salient conclusions was that absorption of fluoride supplements is largely dependent upon their solubility (i. e., upon the ease with which they dissolve in water or in digestive juices). As might be expected, in McClure's balance studies, previously described, from 35 percent to 50 percent of the fluoride ingested in bone meal was not absorbed from the digestive tract and appeared in the feces.

To conclude this inquiry into the most pertinent experiments that have been performed on animal species, let us return to man and cite one series of observations upon the feeding of sodium fluoride in capsules to patients dying of incurable, malignant (cancerous) states. Black and his coworkers reported (39) upon the results in 70 such individuals, adults and children. Children with leukemia, a deadly disease of the blood forming organs, received a total daily dose of 80 to 200 mg.; the average adult dose was 320 mg. daily. The usual period of medication was 3 or 4 months and even in periods up to 6 months no evidence of acute or chronic intoxication was detected. Microscopic examination of organs after

death from the disease also failed to reveal damage to tissue. One patient is reported to have received a total of 5600 mg. intravenously in doses of 400 mg. over a period of 9 days without apparent toxicity. Numerous investigators report the personal ingestion of as much as 250 mg. at a single dose although an estimated dose of 105 mg. has been reported to be fatal. These acute, short-term experiments are not pertinent to the consideration of a water fluoridation program with a daily dose of about 1 mg. of fluorine to the individual, young or old, sick and well. They are introduced only to demonstrate that surprisingly large quantities of this chemical element, fluorine, have been taken daily under careful scrutiny, often over considerable periods of time, by man and animals without detectable ill effects.

We have, then, considered the evidence of all types gathered by systematic study of individuals and of vital statistics and by laboratory investigation and we have not encountered any hint of a health hazard in the ingestion of water fluoridated naturally or by supplement to the physiologic level or even to a concentration four times as high. The reasons why no evidence of injury to health has occurred or is to be anticipated have also been examined. They may best be summarized by the statements: (1) The body shows no tendency to store fluorine in physiologic dose, except for a very small fraction in the developing teeth. (2) Excretion through the kidneys and skin of absorbed fluorine in ideal dosage is practically complete. (3) On the basis of all evidence, these physicologic (functional) processes are unchanged at levels of intake of fluorine at least four times the ideal daily doses, thus providing a very wide margin of safety for the consumer of properly fluoridated water, whatever his age or state of health. (4) There is strong evidence to support the view that this factor of safety extends to intakes of eight times the ideal daily dose and there is no published evidence to the contrary.

Freedom to dissent from a popular view and the right to advance one's opinion on any topic are among the most precious heritages of those who live under a representative form of government. Part of the price which we gladly pay for the exercise of these rights is, inevitably, delay in instituting programs which are either highly desirable or vitally necessary. Because of the need for accurate definition of the problem to be faced and the merit of a specific proposal for attacking it, confusion and controversy mark a predictable stage through which the most meritorious proposal must pass. These result from impatience or inadequate explanation by its proponents and from honest doubt, unreasoning anxiety, lack of understanding, suspicion of motives, sheer ineptness, or self-seeking in various degrees on the part of opponents. These evidences of human imperfection form a pattern familiar to one who has studied the progress of legislative proposals to supplement too low a natural concentration of fluorine in a community water supply. Every elected official of a municipality in which fluoridation is contemplated is dutybound to consider the views of the objectors as well as those of the advocates. It is important that he be fully informed as to the nature and merit of the opposition. Those of us with scientific aptitude and training who, as members of the medical profession, enjoy the public trust are under the dual obligations of studying the issues which have been made to appear controversial and to proclaim which arguments and attitudes have scientific merit, classifying as irrelevent those which lack such quality.

In the enormous literature on fluorides and on fluoridation of water, scientific publications or public testimony in opposition have appeared from six individuals in particular whose scientific training and experience qualify them as deserving of respectful attention and inquiry into the reasons for their views. They all appeared before the Delaney committee in opposition to fluoridation of water. Since their opposition is repeatedly cited by those who have little claim to aptitude or opportunity for objective evaluation of the problem, detailed comment is in order.

(1) Dr. Robert S. Harris, professor of biochemistry of nutrition, Massachusetts Institute of Technology, brought his views into public attention in 1951 in a letter (40) to a newspaper and made statements therein about the behavior of fluoride in the body which, when he defines the concentration, are at variance with the overwhelming weight of evidence or which leave the concentrations undefined and therefore simply useless as a basis for discussion. The 12 points into which his letter is arranged constitute an odd mixture of statements of widely supported fact, of allegations which cannot be documented, of others which have been disproven and of judgments with which the informed reader may differ. Certain of his arguments were later elaborated in the form of 19 questions in testimony before the Delaney committee (of which, more later).

They have been thoughtfully answered (41) by Gerald J. Cox, Ph. D., director of dental research, School of Dentistry, University of Pittsburgh, a distinguished contributor to our factual knowledge of the effects of fluorine in human metabolism. Dr. Harris' questions reveal principally his wholly understandable wish that more were known of the ultimate cause (if there be only one) of dental caries. They raise no points, however, whose answers can be construed as being unfavorable to a fluoridation program. This consideration has, obviously, impressed itself upon Dr. Harris who has subsequently (1953) written a letter (42) stating that he neither supports nor opposes fluoridation. This marks a decided shift from his position taken in 1951 and expressed in 1952 before the Delaney committee.

(2) V. O. Hurme, D. D. S., is research director, Forsyth Dental Infirmary, Boston, Mass., in which institution dental service is provided for children. He is the author of a paper (43) entitled "An Examination of the Scientific Basis for Fluoridating Populations" and of a number of public statements questioning the advisability of fluoridation of water supplies. His article produces no evidence that fluoridation is either dangerous or ineffective. A study of his paper leaves the reader with the convictions (*a*) that the author has failed to review the voluminous literature which gives concrete evidence upon points about which he confesses himself to be in doubt and (*b*) that his use of such terms as mass medication and compulsory procedures reveal an emotional bias which casts doubt on his objectivity. A lengthy comment on points which Dr. Hurme has characterized as controversial has been made subsequently in the same publication by David B. Ast, D. D. S., director of the bureau of dental health, New York State Department of Health, who has been, unlike Dr. Hurme, long noted for his contributions to the scientific literature on this subject. Those who find themselves alarmed by Dr. Hurme's wish to delay fluoridation pending the establishment of criteria which he does not, himself, define should read Dr. Ast's rebuttal. To quote the latter verbatim, "Many of the accepted public health procedures were generally applied with far less study and knowledge of the mechanism by which they worked or side reactions than is known about water fluoridation. I know of no public health procedure, including water chlorination, Pasteurization of milk, or vaccination which has had the intensive and comprehensive study before it was applied as wafer fluoridation has had."

(3) The antifluoridation pamphleteers have made a major issue of a premature announcement of research by Alfred A. Taylor, Ph. D., at the biochemical institute, the University of Texas (Austin). Dr. Taylor set out to study the time of appearance of malignant breast tumors in a strain of mice used by many laboratory workers because they are bred to the specific trait of developing such tumors spontaneously in nearly 100 percent of animals. Dr. Taylor proposed to give different concentrations of sodium fluoride in the drinking water of different groups of the mice and to observe whether or not the age at which tumors appeared would show any correlation with their respective intakes of fluorine. As is their hereditary trait, practically all of the mice died with well developed tumors of the breast. Dr. Taylor, unfortunately, sent a letter to Mrs. Marion E. Lyon (of whom more anon) before he had carefully reviewed all the pertinent data in his experiment and even before publication of his findings in a scientific journal. She, as did other pamphleteers, quoted him at length and reproduced his tabulated data to show that mice thought to be receiving 1 p. p. m. and 10 p. p. m. of fluoride in drinking water developed the breast tumors at an earlier age than those receiving distilled water. This created a furor, as may be imagined, and was used effectively to cause such alarm in lay minds that plans for fluoridation in several communities were delayed for the time being. A furor on a different plane, however, resulted when a research team from the U. S. Public Health Service reviewed Dr. Taylor's plan of procedure and found (44) that the solid food of the experimental animals consisted of a chow which, itself, contained 42 p. p. m. of fluorine. As aftermaths, Dr. Edward Taylor, director of dental health of the Texas State Department of Health wrote an article (44) entitled "Facts Relative to Rumors that Fluoridation Causes Cancer," which was published promptly in the Texas Dental Journal in refutation of the rumors. Moreover, Dr. Chauncey Leake, vice president of the University of Texas and one of the most respected men in the field of the medical sciences, wrote a letter (45) to Dr. Edward Taylor expressing his regret over the incident and making it plain that "there is no contraindication of fluoridation of drinking waters." These, then, are the facts about the research and its attendant publicity which have given rise to the allegations that water fluoridation programs increase the

risk of the development of cancer or that the effects of drinking fluoridated waters may be particularly hazardous for persons who have cancer.

(4) Dr. A. L. Miller is a former State health officer of Nebraska, from which State he is now a Representative and a member of the Delaney committee; as such he made a separate statement and has made other addresses on fluoridation before Congress, taking a position in opposition to programs for the fluoridation of community water supplies. His arguments disregard the weight of evidence and do not show regard for the realities of the situation in his recommendation that fluorine be provided by means of tablets or supplement in milk, as will be shown later. He has tortured the meaning of words in attempting to "interpret" the forthright approval by the American Medical Association of the fluoridation of water supplies. He has fallen into serious factual error in using inappropriate vital statistics in evaluating the incidence of circulatory diseases as a cause of death in Grand Rapids, on which point he has been most clearly and courteously set straight (46) by W. B. Prothro, M. D., public health director of Grand Rapids. He has presented no acceptable evidence that fluoridation is either dangerous, ineffective, or undesirable and his testimony has been challenged in detail elsewhere (47). His statements have, inevitably, been widely reproduced as a scientific opinion in opposition to fluoridation. If he claims to speak with scientific, rather than political authority, however, his attitude leaves much to be desired.

(5) Margaret C. Smith, Ph. D. and (6) her husband, Howard V. Smith, are distinguished chemists who have for many years been associated with the University of Arizona, the former in human nutrition and the latter in agricultural research, respectively. They were among the first to show by animal experiment that mottled teeth could be produced by an excess of fluorine in the drinking water; among their many valuable contributions are observations on the increased incidence of fluorosis at higher environmental temperatures with a given intake of fluoride. In their testimony before the Delaney Committee (loc. cit., pp. 1602–1614, 1614–1623) they stress the value of fluorine in reducing the incidence of dental caries and state their acceptance of the work of the United States Public Health Service in epidemiological studies of naturally fluoridated water and in experimental studies of water supplemented by fluoridation (such as in Grand Rapids. The expressed opposition to the extension of fluoridation programs to other cities (as of 1952) principally in their shared belief that sufficiently exact climatic data were not then available to set a concentration for a given community which would be high enough to give maximum caries prevention, yet low enough to prevent obvious dental fluorosis. A careful reading of their testimony makes it clear that they consider even "questionable" or "very mild" degrees of dental fluorosis, as defined by the United States Public Health Service, to be not only toxic manifestations of fluorine intake but as esthetically objectionable. Now, the definition of "very mild" dental fluorosis postulates only a few very small, whitish, nonopaque areas on the back teeth, but not involving as much as 25 percent of any tooth surface. Such are not detectable on examination by the average physician or dentist, much less by the individual who has them. It is therefore, the accepted opinion that they are not objectionable and that their presence in as many as 10 to 15 percent of persons is not too high a price to pay for the partial protection against caries obtained by fluoridation. It is doubtful that the Smiths are on sound ground in differing with the dentists on this point and insisting on classifying such findings as dental fluorosis, as defiguring and as evidence of fluorine toxicity. Evidence has been published both before (9, 10) and since (61) their testimony to substantiate their view that the generalization is unsound that 1 p. p. m. of fluoride is the ideal concentration for every community in the United States, regardless of climate, as will be elaborated. There can be no quarrel on this point between the Smiths and many advocates of fluoridation programs.

Such is the extent of the published dissent from the almost unanimous view of those qualified through training and experience to express themselves on the scientific aspects of the situation. That the recorded anxiety as to possible, usually unspecified ill effects on the part of so small a minority has been rejected as contrary to the evidence or irrelevant is obvious in the approval of fluoridation by the respected, responsible medical and dental organizations yet to be listed. There is an equally impressive roster of advocates among men of science engaged in teaching, in research, in public health activities and in water engineering. The testimony of the opponents quoted above would be a slender reed to flourish in aggressive opposition. It would be fatuous to assume that such constitutes the backbone of determined efforts to prevent the wider adopion of fluoridation. It

is a simple matter to identify the sources of strength behind the avowed and open resistance to fluoridation but assay of their various motives is sometimes difficult. Several groups of pamphleteers regularly spread their antifluoridation documents in communities which are entertaining proposals for fluoridation. Pertinent data as to membership, methods of arriving at policy, organization and sources of funds are not often revealed. Close study of their printed material gives a clear view, however, of their standards of reporting and what, for want of a better term, may be termed their sense of responsibility. Space does not permit the inclusion of the detailed critique which has been prepared. A few allusions, quotations, and comments should be sufficient to characterize them. Printed and mimeographed material from the following three sources have been liberally circulated in metropolitan St. Louis and have been effective, hitherto, in their purpose.

(1) A compilation of mimeographed material was received on November 10, 1951, from the water commissioner of St. Louis, Mr. Thomas J. Skinker, at the St. Louis Medical Society. It bears the name and address of Mrs. Marion E. Lyon, 415 South Main Street, Geneva, N. Y., and the notation that it was obtained from her on October 25, 1951. It consists of 14 sheets of paper with 46 numbered items of excerpts from newspaper stories, scientific publications, speeches and letters addressed, presumably, to Mrs. Lyon. The authors are so various in occupation as to defy classification and their attributed claims to authority are, at times, obscure. Reference will be made to the paragraphs as numbered, for the convenience of those in possession of copies of this document. The comments to be made are concerned with views attributed to those individuals whose stated professional position immediately rouses the interest of the reader. As might be expected, the opinions of Alfred Taylor, Ph.D., the unhappy outcome of whose observations on breast cancer in mice will be recalled, are set forth in paragraphs 1, 16, and 37, paragraph 16 being devoted to his letter, itself to Mrs. Lyon. The views of Dr. V. O. Hurme (43) appear in paragraphs 24 and 35 and Dr. Robert S. Harris' letter (40) of February 25, 1951, is quoted in part in paragraph 33. The portion of Dr. Harris' letter testifying to the effectiveness of fluoridation is not reproduced.

To the uninitiated, the appearance of testimony by Dr. Huntington Williams, M.D., health commissioner of Baltimore, in paragraph 11, by Winston H. Tucker, M.D., health commissioner of Evanston, Illinois, in paragraph 26 and by Dr. J. L. T. Appleton, professor of Microbiology in the school of dentistry, University of Pennsylvania, in paragraph 34, that fluoridation should be undertaken only as an experiment comes as a shock until one notes that these statements are undated. Inquiry shows that Dr. Williams subsequently recommended (48) on March 3, 1952, fluoridation of the water supply of Baltimore and this was put into effect on November 26, 1952. Dr. Tucker's statement was made in October of 1951; his advocacy of fluoridation for other communities has been made clear (16). Dr. Appleton's quoted statement was made in May, 1950; he is a declared advocate of fluoridation and, as a member of the ad hoc committee on fluoridation of water supplies, National Research Council, participated in the preparation of that report (7) which recommended fluoridation in November, 1951. These gentlemen are distinguished students of the effects of fluoridation, of conservative and mature judgment and in positions of grave responsibility. They had no hesitancy about counseling a cautious approach in earlier years. Statements in opposition to fluoridation are attributed in paragraph 26 to Dr. E. V. McCollum, professor emeritus of biochemistry of Johns Hopkins University, one of the great scientists of his generation, whose textbook is known to every medical student of the past 50 years. Mrs. Lyon has released material quoting one Harold Lamb, D.M.D., who quotes an alleged letter dated August 21, 1950, attributed to Dr. McCollum, in these words. "This measure of prevention, in some measure, the high incidence of dental caries, is in the experimental stage. So far as I am aware, it has not been found to be effective where it has been tried." Dr. Lamb thereupon assures the reader that this statement "may be verified at sources by any who wish to take the trouble to write." Upon inquiry, Dr. McCollum has denied (49) being the author of such a letter and has challenged the Citizens' Medical Reference Bureau to verify its existence, which they have not, apparently, undertaken to do. An issue far more grave than mere obsolescence of viewpoint has been introduced by the inclusion of material whose authenticity has been repudiated. No explanation from Mrs. Lyon, Dr. Lamb or the Citizens' Medical Reference Bureau has come to our attention.

In portions of the Lyon document which purport to abstract original source material from the scientific journals, no pretence of reporting objectively the

whole purpose and conclusion of each author is evident to one who has studied the original publications. In paragraph 22 appears an excerpt attributed to the April 1951 issue of Prevention, a magazine devoted to the conservation of human health (of which, more later). This excerpt is written in such a way as to give the reader the impression that all the material in it expresses the findings and viewpoints of the studies (2, 3, 37, 38) on fluoride balance and the differences in solubility and absorbability between bonemeal and sodium fluoride, reviewed earlier in considerable detail. Whoever prepared the material for publication in Prevention, however, has very carefully selected certain data of the authors and written it up in such a way to include his own comments as though they were the remarks of the authors. He has omitted all data, references and conclusions unfavorable to his cause, Jackson (38) and Largent (3, 34) would be amazed to learn that an uninformed person, reading paragraph 22, would probably draw the conclusions that they considered bonemeal to be a safer or more appropriate method of administering fluorine than by the fluoridation of the water supply for human beings. And McClure (2, 16) one of the most prolific contributors of studies on the metabolism of fluorine, would never discover, in reading the mixture of his data taken out of context and special pleading by the reviewer, that he, himself, was a consistent advocate of fluoridation.

The evidence advanced above should be sufficient to thoroughly discredit the printed matter emanating through the Lyon document, from the Citizen's Reference Committee and in Prevention. A further comment on the last is in order. Perusal of several reprints have shown a continuing devotion to the exploded (46) views of Representative Miller and Dr. Alfred Taylor more than a year after Dr. Leake's repudiation of that affair (45). In response to request, the assistant editor of Prevention sent a copy of the issue of June, 1953, with a cordial letter stating: "As you will see, we do not advocate the health policies of any special group. We do research in medical and scientific magazines and publish the results of our findings as they relate to prevention of disease. It is our opinion that a correct diet and way of life will in general prevent many of the diseases of twentieth century life." A study of the issue submitted reveals that such a disclaimer is less than candid. The character of the advertising and of the news articles leads only to the conclusion that this magazine follows the line of thought known as Naturopathy. It includes an antifluoridation article by the same lay author whose diatribe against fluoridation was published in February, 1953, issue of Harpers Magazine and consists of the usual mixture of allegations which form such a familiar pattern. While they concentrate on the "Operation Rat Poison" theme to characterize the fluoridation movement, they seem most concerned (50) about the use of the community water supply as a vehicle for fluorides and they occasionally suggest that fluoride intake for reduction of dental caries may be desirable if it is ingested in some other vehicle. One wonders whether this press has sent pamphlets into those communities which have installed defluoridation plants in order to reduce the high concentration elsewhere as they oppose supplementing the low concentration in St. Louis and St. Louis County. If not, their devotion to natural water is tainted, if the former adjective can be fairly applied to any aqueous solution treated as is our own to make it acceptable from the esthetic viewpoint as well as from considerations of self-preservation. Clearly, the human ingestion of adequate amounts of fluoride as bonemeal or pablum is acceptable to this publication, as stated in the excerpt attributed to it in paragraph 22 of the Lyon document. Without any imputation as to the motivation of this publication, its position is quite inconsistent, it has no discernible scientific status and its standard of reporting makes any of its statements on this subject unacceptable as evidence.

The product of a third pamphleteer, W. D. Herrstom, of Faribault, Minn., is worthy of note. It is entitled "Americanism Bulletin," selling for 10 cents per issue. The September, 1951, issue (51) was sent into St. Louis as recently as July, 1953. It contains "25 reasons why community water supplies should not be fluoridated." These contain no evidence of either scientific or educational value, but express concern lest a saboteur fatally poison an entire community through excessive fluoridation by the mere twist of a valve. Fluoridation is described also as a subtle enemy plot to weaken the mental powers of the American people in order that they will fall an easy prey to "Satanic dictatorship." Another issue appeals strongly to fear of foreign domination and describes the entire fluoridation movement as a plot by socialistic stooges of Mr. Oscar Ewing. The implication is plain that any supporter of fluoridation is necessarily an admirer of Mr. Ewing's politico-economic views. This

is entertaining grounds for polemics but is far afield from a discussion of the merits of fluoridation or of possible hazards to health.

The opponents of fluoridation whose efforts are chiefly confined to pamphleteering at 10 cents a copy tend to quote one another and operate in effect, as a team. All have laid much stress on the failure of the Delaney committee to approve the principle of fluoridation of community water supplies. It is fair to state that many openminded, genuinely inquiring persons without the ability to evaluate scientific evidence have been much impressed by the Delaney report (52) and such is the natural reaction to what purported to be a congressional hearing of scientific testimony. The report itself is, we believe, very fair in intention. It reflects a clearly-expressed sense of responsibility on the part of the members of the committee not to reach a hasty conclusion nor one which might conceivably result in harm to the population of any community in the United States.

The report itself, however, is much fairer in tone than was the atmosphere of the hearings, as a close reading of the latter makes obvious. A contentious attitude, particularly toward witnesses from the United States Public Health Service, seems to have been displayed by the chief counsel and by one of the members of the committee and moved Representatives Paul C. Jones, of Missouri, and Walt Horan, of Washington, themselves members, to protest against a prosecuting attitude toward certain advocates of fluoridation.

We shall not go into a detailed commentary here, as that has been done previously (53) with, we believe, full effectiveness. We would characterize the report, not as bad, but as disappointing in that it (1) failed to give due emphasis to the better evidence in the hearings and (2) sought for perfect and complete knowledge in a scientific field unlike that demanded of any other in which reliable data for day-to-day application are available. To deny the validity of the evidence for the safety of fluoridation today pending the completion and extension of experimental investigations is to disregard what has already been learned and to introduce the concept of a conflict between practice and investigation which is not valid. The additional views, filed as a separate report by Representative Miller have been commented on previously. He is in factual error in the notion that only persons under 8 years of age will be benefited by fluoridation and he is guilty more than once of interpreting statements of the American Medical Association to derive meanings which are contrary to the accepted usage of the English language. In response to a recent inquiry, George F. Lull, M. D., secretary of the American Medical Association, has furnished (54) a complete copy of his statement to the Delaney committee (55). The council on pharmacy and chemistry and the council on foods and nutrition unequivocally state: "After considering the evidence available at this time, the councils believe that the use of drinking water containing up to 1 part per million is safe." The reasons given for avoiding additional intake of substances of high fluorine content and the wisdom of varying the seasonal concentration of fluoride ion in the water, according to the climatic conditions, will be familiar to the reader. The councils quite properly limited their statement to consideration of the health hazard. That they refrained from urging communities to support or oppose fluoridation is simply recognition of the fact that the evaluation of the need for fluoridation in a given community and the assurance of the benefit to be expected from such a local program can best be made by members of the dental profession. Any group of physicians would be presumptuous in setting themselves up as better judges of the latter points than the dentists of the community and of the various health services. The house of delegates has followed a similar viewpoint but endorsed the principle of fluoridation as a forceful statement of their belief in its safety and effectiveness.

Many opponents of the fluoridation of water supplies have recognized the merit of a daily intake of fluorine in approximately 1 mg. dosage to increase the resistance of the teeth to caries, provided that another means of ingestion be provided. Such alternatives suffer from either the risk inherent in dispensing necessarily concentrated stock solutions or the uncertainty of dosage through bread, milk, salt or other foodstuffs whose intake by the individual varies much more widely than does the total intake of water (including the water in solid food). The expense and the distribution problems involved in the dispensing of tablets make them an impracticable choice also as a vehicle of preventive medicine. An elaboration (56) of the relative unsuitability of all these methods has been furnished by Robert E. Shank, M. D., professor of

preventive medicine and public health, Washington University School of Medicine, St. Louis, Mo. Topical application of relatively concentrated solutions of fluorides (directly to the teeth) have proven to be of definite value as a measure of individual prophylaxis against tooth decay. It is widely held to be less effective than systemic intake of fluoridated water from birth. The limited dental personnel available in both public health work and in private practice and the expense of such a method make it a poor choice of methods of prophylaxis in comparison with fluoridation of a community water supply. It is wholly impracticable as a public health measure, therefore, in any but the small communities or in rural areas. One of the major, secondary benefits to be derived eventually from a fluoridation program is the partial release of dental personnel from the treatment of caries and its complications in order that they may devote more time to oral (mouth) prophylaxis and other phases of dentistry.

It is outside the scope of this report to present the evidence for the effectiveness of fluoridation in those communities in which the concentration of fluorine ion in the water supply was formerly less than ideal. This is the prerogative of those members of the dental and public health professions who have made a lengthy study of the accumulated data. Suffice it to say that we have reviewed many published studies and have been furnished current, as yet unpublished statistics from certain communities which give impressive testimony as to its merit. The close correlation between endemic (natural) fluoride ion concentration of a community water supply in inverse relationship to the incidence of dental caries at a given age level is a marvel of statistical acceptability. The clarification of this relationship by Dean (57) and others followed from earlier demonstrations (58) that disfiguring brownish mottling of the enamel was due invariably to a high fluorine content of water and that where mottling (dental fluorosis) was common, caries was relatively uncommon. These fundamental observations are a brilliant chapter in American science. Naturally enough, the first practical applications to which they were put were the development of means for removal of excessive fluorine from the water. Such programs of defluoridation were in operation for years before sufficient data had been gathered to permit the safe beginning of programs to supplement waters naturally deficient in fluorine. It is of particular significance that the people of the city of Muskegon, Mich. (which had only a trace of fluorine in its water and was teamed with Grand Rapids for continuing comparison upon the initiation of fluoridation in the latter city in 1945) have become so impressed with the reduction of dental caries in the children of Grand Rapids that they have ceased to provide a baseline for comparison by initiating the fluoridation of the Muskegon water (25). The greatest benefits are seen in those persons who have received an adequate daily amount of fluorine from birth and this benefit has been clearly demonstrated to extend in such persons into adult life, as shown by comparative dental studies (59) of adults up to the age of 44 living in Colorado Springs (2.5 p. p. m.) and those living in Boulder, Colo., which has practically no fluorine in its natural water supply. All of the residents raised in a community with an adequate concentration of fluorine will be benefited thereby in time, not merely the school children. It is not widely enough appreciated, however, that the benefit in reduction of caries from initiation of a fluoridation program in a given community will be proportionate to the concentration of fluoride ion at the outlets of the water system prior to the start of the operation. The city with a natural concentration of 0.5 p. p. m., for example, can expect decidedly less reduction of caries experience than one with only a trace of fluorine for the people of the former will have the lower incidence of caries prior to fluoridation.

The need for increasing the concentration of fluoride in the water supplies of metropolitan St. Louis has been strongly stated, the entire issue of the bulletin of the St. Louis Dental Society, April 1953, having been devoted to papers and communications on the subject of fluoridation. Collected data reported elsewhere (60) show that the children of this community have an experience of caries somewhat below the level anticipated from the average fluoride ion concentration of approximately 0.3 p. p. m. and more nearly that to be expected from a water supply containing 0.5 p. p. m. This is not necessarily of importance; it may be interpreted as being due either to conservative evaluation of observed caries or to the existence of climatic conditions (higher temperature and humidity) in the Mississippi Valley of a more tropical nature than we generally assume. Too many other nutritional and oral factors enter into caries incidence to permit

a specific explanation of this point. It must be taken into account, however, in considering to what concentration fluoride supplement should be added to the municipal water supply and in attempting a prediction of what reduction of caries incidence is to be anticipated thereby.

As has been stressed, the ideal concentration of fluorine to be approximated for any community must be arrived at by consideration of its climatic characteristics and a lower concentration supplied in seasons of considerable warmth and humidity: there is new evidence (61) that dental fluorosis occurs at lower concentrations of fluorine where such weather is prolonged than in more temperate areas. With such a reservation as to actual concentration to be attained, we strongly endorse the statement on March 1, 1951, by the health commissioner of St. Louis, J. Earl Smith, M. D., stating the official position of the St. Louis health division and recommending the fluoridation of the St. Louis water supply. Dr. Smith has done well to point out that "Fluoridation does not eliminate tooth decay entirely * * * fluoridation is not a cure-all; good dental care will continue to be a necessity. Fluoridation is a preventive measure but is not 100 percent effective. It is no more a substitute for good dental care than pasteurization is a substitute for the clean production of milk. It is, however, a long stride forward in the fight on man's most common defect, tooth decay.

As citizens, as well as physicians, we should be mindful that no evidence of harm to any industrial process from the use of water containing as little as 1 p. p. m. of fluoride has been published. On the contrary, there is much testimony, based upon investigation in their own laboratories, that the products of bakers (62), canners (63), and brewers (64) will suffer no deleterious effect. The fears recently expressed (65) by G. S. Bratton, technical adviser to the president, Anheuser Busch, Inc. of St. Louis, fall into two categories, (1) that the making of beer itself may suffer through effects on the yeast (contrary to the evidence cited) and (2) that the increased concentration of fluoride through such processes as produce byproducts (which are used in other foods) will exceed permissible limits (approximately 5 p. p. m.), Bratton has been answered, step by step, by W. Victor Weir, president, the St. Louis County Water Co., in an address (66) which should be studied by anyone interested in this phase of the effects of fluoridation. Reprints are obtainable from his office. None of the national distributors of beer has openly opposed fluoridation of their community water supplies but it so happens that none of them is located in a community which has, as yet, initiated fluoridation of its water except Milwaukee which initiated fluoridation July 1953. We have every confidence that members of the brewing industry will not in the future offer either open or overt opposition to a program of preventive medicine that is so demonstrably in the public interest. The reader must realize that the breweries of Milwaukee used water from deep wells containing an average of 0.9 p. p. m. (one as high as 1.8 p. p. m.) of fluoride ion from the year 1879. In more recent years, many breweries established private filtration plants for the use of Lake Michigan water, but now use the municipal water supply which contains only a trace of fluorine. As for other points of interest, fluorides at the specified concentration have no bactericidal (germ-killing) effect, do not affect the compounds formed in water after chlorination and provide all or part of the fluorine needed to remove silica from boiler water, depending upn which compound is used. There have been no effects on sewage treatment processes, the fluoride concentration of sewage quickly reaching that of the water supply (67).

As of August 1, 1953, the following major cities in the United States are fluoridating their water supplies: Baltimore, Md., Washington, D. C., Pittsburgh, Pa., Cincinnati, Ohio, San Francisco and San Diego, Calif., Tulsa, Okla., Louisville, Ky., Indianapolis, Ind., and Milwaukee, Wis. Philadelphia, Pa., has authorized fluoridation. Together with the more than 700 other communities in 43 States, a total population of more than 14 million, are using water supplemented with fluorine. Missouri is 1 of the 5 States in which no fluoridation is being practiced, the others being Arizona, Nevada, New Mexico, and Utah.

Exhibit 1

Stability of an Element

The fundamental premise upon which the science of chemistry is based is that of the uniformity of identity of any element. For instance, all sodium ions with an atomic weight of 23 are identical in properties, no matter what their source. The atomic weight determines the structure of the atom and informs the chemist

of the element's characteristic properties and reactions. Ephraim states, "The atomic nucleus * * * (is) an extremely stable system." [1]

Along with all other chemists, Profs. S. S. Cooper and C. N. Jordan of the St. Louis University Department of Chemistry stated recently that fluoride ion from one source is identical with fluoride ion from all other sources.[2]

E. A. Doisy, Jr., M. D.

EDITORIAL NOTE.—Due to lack of space, only exhibit 1 is reproduced. Exhibits 2 to 21 are on file at the St. Louis Medical Society and are available for inspection.

The Committee was appointed by Dr. A. N. Arneson, M. D., President, on January 30, 1953.

Members of the Committee

Harold A. Bulger, M. D., Assistant Professor of Clinical Medicine, Washington University School of Medicine.

Raymond O. Muether, M. D., Associate Professor of Internal Medicine, St. Louis University School of Medicine, and Director of Laboratories, St. Mary's Group of Hospitals.

Willard Bartlett, M. D., Chairman, Assistant Professor of Clinical Surgery, St. Louis University School of Medicine.

Consultants of the Committee

Edward A. Doisy, Jr., M. D., Assistant Professor of Internal Medicine, St. Louis University School of Medicine.

Robert E. Shank, M. D., Professor of Preventive Medicine and Head of Preventive Medicine and Public Health; Professor of Preventive Medicine in Department of Medicine, Washington University School of Medicine.

J. Earl Smith, M. D., Senior Instructor in Internal Medicine, St. Louis University School of Medicine, and Health Commissioner, the City of St. Louis.

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(23) Personal communication from G. J. Hildebrand, M. D., dated February 26, 1953. (Exhibit 3.)
(24) Personal communication from W. B. Prothro, M. D., dated February 27, 1953. (Exhibit 4.)
(25) Personal communication from C. V. Tossy, D. D. S., dated May 14, 1953. (Exhibit 5.)
(26) Personal communication from Fred D. Welch, M. D., dated March 5, 1953. (Exhibit 6.)
(27) Form letter to presidents of 15 local medical societies. (Exhibit 7.)
(28) Form letter to 15 District Health Officers. (Exhibit 8.)
(29) Personal communications from presidents of local medical societies and from District Health Officers in eight other cities. (Exhibit 9.)
(30) Fluoridation of Water Supplies, Iowa State Dept. of Health, 1951.
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(39) Black, M. M.; Kleiner, I. S., and Bolker, H.: New York J. Med. 49: 1187 (May 15) 1949.
(40) Tearsheet from a pamphlet entitled "Fluoridation," by H. B. Anderson, Secretary Citizens' Medical Reference Bureau, price 10¢. (Exhibit 10.)
(41) Copy of address by Gerald J. Cox, Ph. D., delivered June 20, 1952. (Exhibit 11.)
(42) Letter from Robert S. Harris, dated Jan. 20, 1953. (Exhibit 12.)
(43) Hurme, V. O., Dental Items of Interest, 74: 518–534, June, 1952.
(44) Taylor, Edward, Texas Dent. J., 69: 381, September, 1951. (Exhibit 13.)
(45) Copy of a letter from Chauncey Leake, dated October 1, 1951. (Exhibit 14.)
(46) Copy of a letter from W. B. Prothro, M. D., dated June 2, 1952. (Exhibit 15.)
(47) Doty, J. R., and Phair, W. P.: J. Am. Dent. A. 45: 351–356 (September) 1952.
(48) Williams, H.: Baltimore Health News 29: 42 (August) 1952.
(49) Letter from E. V. McCollum, dated January 6, 1953. (Exhibit 16) Published in The Bulletin, St. Louis Dental Society, 24: 22 (February) 1953.
(50) Reprint from Prevention, A Magazine Devoted to the Conservation of Human Health. (July) 1952. (Exhibit 17.)
(51) Excerpts from Americanism Bulletin, No. 17, (Sept.) 1951. (Exhibit 18.)
(52) Report of the Select Committee, etc., House of Rep. 82nd Congress, 2nd session, pursuant to H. Res. 74, 82nd Congress, 1st session, (July 10) 1952.
(53) Doty, J. R., and Phair, W. P.: J. Am. Dent. A. 45: 351–356 (September) 1952.
(54) Personal Communication from George F. Lull, M. D. (Exhibit 19.)
(55) Statement submitted on February 27, 1952 to House Select Committee on behalf of American Medical Assn. by George F. Lull. (Exhibit 20.)
(56) Statement by R. E. Shank, M. D., dated June 27, 1953. (Exhibit 21.)
(57) Dean, H. T., et al.: J. Am. Water Works A. 35: 1161, 1943.
(58) McKay, F. S.: J. Am. Dent. A. 15: 1429 (August) 1928.
(59) Russell, A. L., and Elvove, E.: Pub. Health Reports 66: 1389–1401, 1951.
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(61) Galagan, D. J., and Lamson, G. G., Pub. Health Reports 68: 497–507 (May) 1953.

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(64) Slater, R. R.: Proc. Am. Soc. Brewing Chemists, p. 60, 1951.
(65) Bratton, G. S.: J. Am. Water Works A. 45: 364–368 (April) 1953.
(66) Weir, W. V.: J. Am. Water Works A. 45: 369–375 (April) 1953.
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Mr. HALE. The committee will now stand in recess until 2 p. m.

(Thereupon, at 12:28 p. m., the committee took a recess until 2 p. m., of the same day.)

AFTERNOON SESSION

The hearing was resumed at 2 p. m.

Mr. HALE. The committee will come to order.

Congressman Derounian has asked leave to submit the following telegram from Dr. Joseph G. Zimring, chairman of the legislation committee of the Nassau County Medical Society, and letters from Dr. S. S. Medvin, secretary of the Suffolk County Dental Society, Dr. Charles A. Wilkie, secretary of the Dental Society of the State of New York, and Dr. Solomon N. Rosenstein, president, the New York State Society of Dentistry for Children, for the record.

If there is no objection, it is so ordered.

(The documents referred to are as follows:)

MINEOLA, N. Y., *May 20, 1954.*

Hon. STEVEN B. DEROUNIAN,
House Office Building, Washington, D. C.:

The Nassau County Medical Society wishes to go on record as supporting the dental profession's opposition to the proposed antifluoridation bill H. R. 2341 which seeks to prohibit fluoridation of certain water supplies.

JOSEPH G. ZIMRING, M. D.,
Chairman, Legislation Committee.

SUFFOLK COUNTY DENTAL SOCIETY,
PATCHOGUE, N. Y., *May 21, 1954.*

Representative STEVEN B. DEROUNIAN,
House of Representatives, Washington, D. C.

DEAR SIR: On May 19, 1954, our society in a general meeting unanimously voted to request your cooperation as a representative of the State of New York in preventing the enactment of the Wier bill, H. R. 2341; a bill to protect the public health from the dangers of fluoridation of water.

Fluoridation of community-water supplies, is an established fact for over 20 million people. Its success as a retardant of dental caries (cavities) has been proven in many studies. In our own State of New York, the Newburgh-Kingston experiment conducted by the State health department has conclusively proved the benefits of water fluoridation. There has been no evidence of any harmful effects from proper fluoridation from this and other scientifically controlled investigations.

Unfortunately opposition to fluoridation seems to be an emotional or prejudicial factor and is not based on any scientifically proven theory. Even the Christian Science organizations no longer oppose fluoridation.

Please prevent the passage of H. R. 2341 and thus enable our future population to be one of greater dental health.

Sincerely yours,

S. A. MEDVIN, D. D. S.,
Secretary, Suffolk County Dental Society.

THE DENTAL SOCIETY OF THE STATE OF NEW YORK,
May 18, 1954.

Hon. S. DEROUNIAN,
The House of Representatives,
Washington, D. C.

DEAR SIR: At the annual meeting of the Dental Society of the State of New York, the following action was taken by the governing body:

"The Dental Society of the State of New York on many occasions has stated its approval of the fluoridation of community water supplies.

"Epidemiological studies have demonstrated that no harmful effects have resulted from this procedure when it is applied under properly controlled conditions. Further controlled studies have indicated beyond doubt that the procedure does in fact materially reduce dental decay in the teeth of children.

"Fluoridation of community-water supplies is enthusiastically endorsed as a public-health measure by such organizations as the American Dental Association, the American Medical Association, the American Public Health Association, the United States Public Health Service, the National Research Council and other national and local organizations of scientific repute.

"Therefore, the Dental Society of the State of New York takes this opportunity to reiterate its approval of the fluoridation of community water supplies where practicable as a means of reducing the incidence of dental disease."

For the above-mentioned reason, may I earnestly request that you support the action of the dental profession in opposing the Wier (antifluoridation) bill, H. R. 2341.

Very truly yours,

CHARLES A. WILKIE, D. D. S.,
Secretary.

THE NEW YORK STATE SOCIETY OF DENTISTRY FOR CHILDREN,
May 18, 1954.

Congressman STEVEN B. DEROUNIAN,
Member, Interstate and Foreign Commerce Committee,
House of Representatives, Washington, D. C.

DEAR MR. DEROUNIAN: During the annual meeting of our New York State Society of Dentistry for Children, we were informed of the Weir bill, the enactment of which prohibits fluoridation of public water supply by communities.

In the light of scientific findings published to date, I feel that enactment of such legislation would be unwise and not in the interest of maintaining good dental health for the children in all communities.

The scientific evidence so far presented indicates that an appreciable degree of reduction of new dental caries results from the addition of 1 to 2 parts fluoride per million parts of water. Also at such dilution, findings indicate that there is absence of unfavorable accompanying signs or conditions.

It would be in the best interests of good dental health for children, and thereby contribute to their general good health to prevent passage of such prohibiting legislation.

Sincerely yours,

SOLOMON N. ROSENSTEIN, DDS,
President.

Mr. HALE. We will resume the hearing on H. R. 2341, and the witnesses who will testify will be Dr. John Knutson, chief dental officer, Public Health Service, Dr. N. C. Leone, chief, medical investigations, National Institute of Dental Research, and Dr. Isadore Zipkin of the National Institute of Dental Research.

The committee is pleased to have you gentlemen with us.

Will you please proceed in your own way?

STATEMENTS OF DR. JOHN W. KNUTSON, CHIEF DENTAL OFFICER, PUBLIC HEALTH SERVICE; DR. NICHOLAS C. LEONE, CHIEF, MEDICAL INVESTIGATIONS, NATIONAL INSTITUTE OF DENTAL RESEARCH; AND DR. ISADORE ZIPKIN, SENIOR SCIENTIST, NATIONAL INSTITUTE OF DENTAL RESEARCH

Dr. KNUTSON. Mr. Chairman and members of the committee, I am glad to meet with the members of this committee to present the view of the Department of Health, Education, and Welfare on H. R. 2341, a bill to prohibit fluoridation of public water supplies. Our position on this bill has been presented in Secretary Hobby's letter of January 20, 1954, to the chairman of this committee. In her letter the Secretary noted that the bill would categorically prohibit Federal, State, or local governmental agencies from treating public water supplies with any fluoride compound and from making water so treated available for use by or on behalf of any such agency. She stated that it is the view of the Department of Health, Education, and Welfare that the decision on whether to fluoridate public water supplies should continue to rest with the local communities. We believe that they are entirely competent to make such decisions and that Federal intervention, either to require or to prohibit fluoridation, would not be justifiable.

The Secretary also referred, in her report on the bill, to the extensive research which has been done by the Public Health Service and many other investigators on fluoridation. I would like to review the highlights of this research with particular emphasis on the effectiveness and safety of this procedure. Later, I should like to discuss the relationship of water fluoridation to the total dental problem in the United States, as well as the role of the Public Health Service with respect to this preventive measure.

Our position favoring the adoption of fluoridation is based on several decades of study of the uses, action, and effects of fluoride compounds on both animals and humans. Because of the widespread distribution of fluorides in nature, especially in water, scientists had a natural laboratory of unprecedented scope in which to study this element. The opportunity for detailed study of the biological effects of fluoride consumption has led to the development of an unusually large body of knowledge on this subject. Today the list of scientific writings on fluoridation, including books, papers, and reports, runs to more than 7,000 publications.

Substantial evidence that dental caries is influenced by small amounts of fluoride was accumulated during the 30-year period 1908–38. The research efforts of this era led to the hypothesis that the use of drinking water with one part of fluoride per million parts of water will reduce the amount of tooth decay in humans by two-thirds.

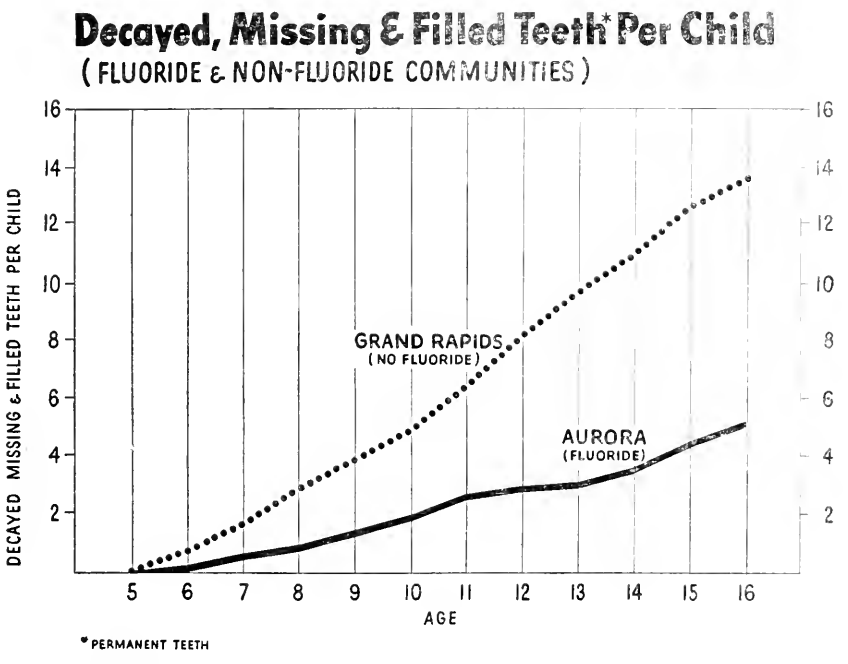
From 1938 through 1945, intensive studies were conducted to follow up this promising lead. These investigations, in the field and in the laboratory, on animals and on man, further demonstrated the dental benefits that had been reported, and at the same time gave no indication that the consumption of small amounts of fluoride produced any harmful physical effects.

Controlled water fluoridation study projects were then begun in 1945 in Grand Rapids, Mich.; Newburgh, N. Y.; Brantford, Ontario, and later in several other cities. These projects were designed to determine whether a purposefully fluoridated drinking water would produce the same beneficial effect as a naturally fluoridated one. A corollary purpose was to gather experience on the mechanical problems of adding and controlling the fluoride concentration in a water system.

The results from these fluoridation study projects have amply demonstrated that the supplementation of a fluoride-deficient water supply is a practical, safe, effective, and an economical procedure. In view of these facts, in April 1951, the Surgeon General indicated that the Public Health Service endorsed the fluoridation of public water supplies.

Let me consider now the specific dental benefits associated with the ingestion of a proper concentration of fluoride. From chart 1, shown to my right, here, you can see the actual change effected by fluoridation.

CHART 1

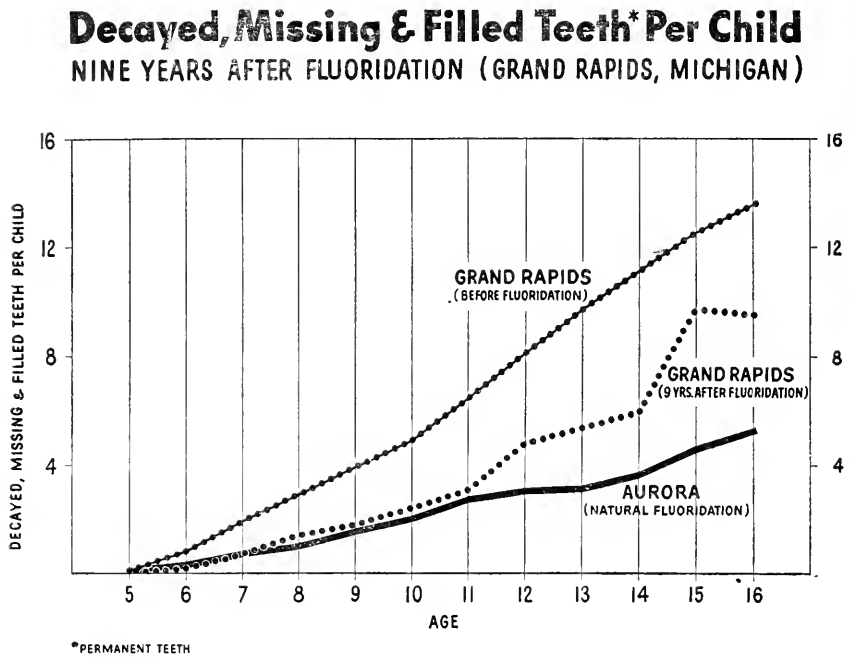


The top line represents the amount of tooth decay experienced by children living in Grand Rapids, Mich., before that city added fluoride to its water supply, that is, before 1945. It shows a progressive increase in dental caries at the rate of about a tooth each year. This rate of increase continues incidentally, until adulthood is reached. The bottom line indicates the level of tooth decay in children from Aurora, Ill., whose drinking water contained 1.2 parts per million of naturally occurring fluoride. As you can see, decay occurs in these children at a considerably lower level. The contrast shown in this

chart has been confirmed by observations on thousands of children in communities throughout the United States.

The impact of fluoridation on Grand Rapids children is shown in chart 2.

CHART 2



The center line represents the amount of tooth decay observed in Grand Rapids children in 1953, 9 years after fluoridation started. It has been superimposed upon the first chart. You can see how very closely the level of tooth decay in Grand Rapids now approximates that in Aurora, especially in the younger age groups. Children 11 years of age or younger showed the greatest benefit. However, it is interesting to note that children who were 3 to 7 years of age at the start of fluoridation and who are now 12 to 16, also acquired a considerable amount of protection.

Another of our studies produced evidence that the dental protection of fluoridation continues throughout life.

In chart 3 you can see the difference in the level of tooth decay in adults residing in Colorado Springs, Colo., who were served by a water supply containing 2.5 parts per million of fluoride, compared with the tooth decay observed in adult residents of Boulder, Colo., which has a fluoride-free water supply. It is apparent that those persons living in Colorado Springs continue to have about one-third the tooth decay found in adult residents of Boulder.

CHART 3

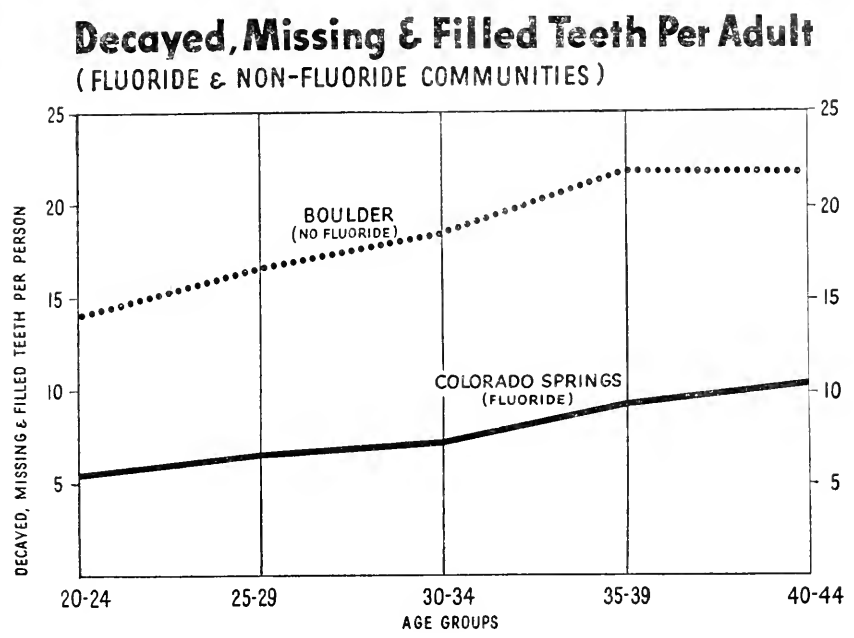
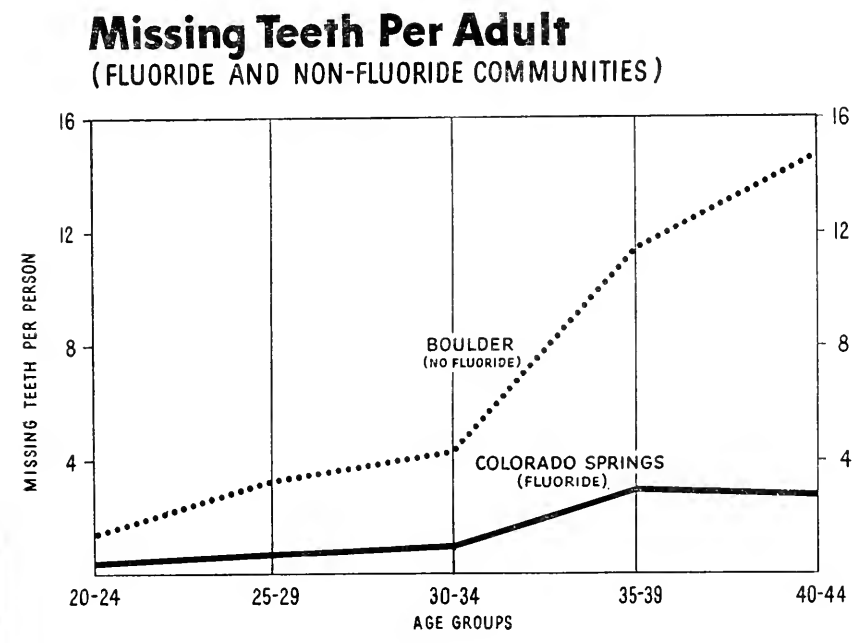


CHART 4



The difference in the prevalence of tooth decay greatly influences the number of teeth lost. This is demonstrated in chart 4, showing that adults of Colorado Springs have lost only about one-third as many teeth as residents of Boulder.

The evidence presented in these four charts exemplifies the vast amount of scientific data which demonstrate the dental benefits accruing to persons who have ingested fluoride in their drinking water throughout life.

In short, the value of water fluoridation can be simply stated: It prevents tooth decay among children by as much as two-thirds. It cuts down tooth loss in adults by an even greater amount.

Now, Mr. Chairman, I should like to talk about our research on the safety of the procedure. Naturally, at the time the fluoridation of water supplies was first considered, the safety of the procedure was of vital concern. Let me cite some of the more important studies and observations which have demonstrated conclusively that the addition of small amounts of fluoride to a water supply is safe.

First of all, as I have noted, fluoride is universally present in the earth's soil, its plants and its animals, including man, and in all water supplies which come in contact with the earth's surface.

CHART 5

Towns Using Naturally Fluoridated Water

(0.7 PPM OR MORE OF FLUORIDE)

This map (chart 5) will give you some idea of the number of communities which normally have at least 0.7 parts per million or more of fluoride in their drinking water. The dots on the map represent some 1,200 communities whose people, about 4 million of them, have been consuming water with close to or above the recommended concentration of fluoride for many years. An additional 60 million have been drinking water with some fluoride—less than ideal—but still measurable. The consumption of fluoride-bearing water was never, therefore, uncommon.

None of us has ever had a completely fluoride-free diet. The majority of foods found on the average American table contain from 0.2 to 0.3 parts per million of fluoride. Seafoods and tea are quite high in fluoride content. Exclusive of drinking water, the average diet in the United States provides a total intake of 0.2 to 0.3 milligram of fluoride daily.

It is thus clear that all of us consume a certain amount of fluoride every day. The addition of fluoride to a fluoride-deficient water merely adds a controlled and very minute amount to our daily intake.

Another important point is that the dissolved particles of fluoride in a water supply are identical whether they come from fluoride-bearing soil, subterranean rock, or from a fluoride compound added mechanically in a water plant. All fluoride ions, regardless of source, are the same chemically, and in their physiological action. This is a basic and elementary fact which has been demonstrated in the laboratory, and in studies on both animals and humans.

Among our principal concerns with the safety of fluoridation is the ability of the body to handle at all times small amounts of fluoride by assimilation or excretion. The kidney is the organ primarily involved in the elimination of ingested fluorides. In general, a person will excrete in the urine almost all of the fluoride ingested. Since this is a key point in any consideration of the safety of fluoridation, Dr. Zipkin of our National Institute of Dental Research will discuss in more detail the efficient manner in which the body handles fluorides.

Dr. Zipkin?

Dr. ZIPKIN. Mr. Chairman and members of the committee:

I should like to comment very briefly on several specific points:

(1) The fluoride content of foods; (2) the effect of fluoride on bone fractures and bone development; (3) the urinary excretion of fluoride, and (4) the effect of low-level fluoride ingestion in animals.

To help make these points clear, I have prepared several charts which are attached to my prepared statement. These are numbered serially, and I shall refer to them from time to time.

The fluoride content of foods: Practically all foods contain some fluoride. Thus, in studying fluoride intake, it is important to consider the amount ingested from food as well as from drinking water. In fact, as Dr. Knutson has pointed out, no one has so far been able to produce a diet for humans—or for animals—which is fluoride-free.

Chart 1 shows that a number of foods contain more than 0.2 part per million of fluoride. Honey, cocoa, spinach, and apples have approximately 1 part per million. Teas contain 30 to 60 parts per million. Continuing with chart 2, we find that some meats and seafoods have a fluoride content up to 27 parts per million. A pound of canned mackerel, for instance, may provide as much fluoride as 15 quarts of drinking water containing 1 part per million of fluoride, or 12 to 15 milligrams.

The daily fluoride intake from food and water has been estimated at from 0.5 to 2 milligrams, varying with the age of the individual. This can be seen in chart 3.

The effect of fluoride on bone fractures and bone development: The possibility that the use of water containing fluoride might predispose the individual to bone fracture has received careful study by our staff at the National Institute of Dental Research. 1,450 high-

school boys, 15 to 17 years of age, and 1,600 young men, 18 to 25 years of age, were questioned individually concerning their fracture experience. Each of these individuals had consumed domestic water containing up to 5 parts per million of fluoride. The data for the high school boys are in chart 4, and that for the young adults are in chart 5. They show no unusual fracture experience.

Another study of this kind involved the review of the physical examination records for 1,000 men at the Lubbock, Tex., Induction Center. This group included persons who had been exposed to drinking water containing more than 5 parts per million of fluoride. This survey showed no differences in fracture experience which could be related to the fluoride concentration in the water. For example, the incidence of fractures among persons from Lubbock, where the water contained 5 parts per million of fluoride, was not higher than the incidence of fractures among individuals from Washington, D. C., where the water was virtually fluoride-free.

A study has also been made of the relation of fluoride in drinking water to the development and calcification in the bones of the hand. X-rays were used to compare the hands of two large groups of children. The first of these groups consisted of nearly 1,300 children, 7 to 14 years of age, who had a history of continuous residence in Amarillo and Lubbock, Tex., and who had consumed domestic water containing 3 to 6 parts per million of fluoride. The second group consisted of about 800 children of the same age from Cumberland, Md., where the water was virtually fluoride-free. The results are presented in chart 6. No differences were observed when the calcification and skeletal development rates were compared with recognized standards. This clearly demonstrated that bone development and calcification rates are the same among children in high and low fluoride areas.

The urinary excretion of fluoride: The facility with which the kidneys eliminate fluoride may be seen in the data collected from the Grand Rapids, Mich., study initiated in 1945, from the study in Montgomery County, Md., started in 1951, and from the data collected in Aurora, Ill.

Montgomery County adults, as shown in chart 7, eliminate 1 part per million of fluoride in the urine, which corresponds to the 1 part per million fluoride content of the drinking water. Fluoride excretion for children of this county up to 14 years of age is at a somewhat lower level, but will equal 1 part per million fluoride in about 4 years, as can be seen from the Grand Rapids data in chart 8.

In the third study, children of comparable age from Aurora, Ill., drink water containing 1 parts per million of naturally occurring fluoride, and they excrete the same concentration in the urine.

While all three of these communities have a similar fluoride concentration in their water supplies, it is important to note the differences in source of the element. Grand Rapids adds sodium fluoride; Montgomery County adds sodium fluosilicate; and Aurora uses water which contains fluoride naturally. In all three communities, the excretion of fluoride in the urine is similar, regardless of the source of the fluorine. It may therefore be concluded that whether the fluoride occurs naturally or is added, the body excretes fluoride in the same manner.

The effect of low-level fluoride ingestion in animals: A large body of knowledge has been accumulated on factors influencing the deposition of fluoride in the bones of the animal organism. I should like to present the major findings of some of these studies which shed light on the manner in which the body handles a low level of fluoride in the drinking water. These experiments, using the white rat as the experimental animal, were designed to answer three questions.

1. How is fluoride deposited in the bones and teeth when exposure has occurred over a long period of time? Rats receiving 10 parts per million of fluoride deposited this element in the bones up to an age beyond which no further accumulation of fluoride occurred. As indicated in chart 9, the oldest rats were 420 days old, which is equivalent to roughly 35 years of age in the human. This experiment approximates a situation in which human beings have been reared on a fluoridated drinking water. From these findings, it would be expected that persons receiving a low level of fluoride in their water would deposit this element up to a certain age beyond which no further deposition would take place.

2. How is fluoride deposited in the bones and teeth when the initial exposure to waterborne fluoride occurs at varying age? In this study rats of different ages, with no previous exposure to fluoride, received similar quantities of fluoride in their drinking water. As can be seen in chart 10, the amount of fluoride deposited in bone varied substantially according to the age of the rat. Older rats deposited appreciably less than the younger ones. The range of age in the rats—from 30 to 330 days—is comparable to a range of 3 to 30 years in the human. From this finding, it would be expected that when a community water supply is fluoridated, older individuals would deposit less fluoride in their bones than do children. It should be remembered that the deposition of fluoride in the bones of children is completely compatible with good health, as evidenced by X-ray examinations of the hands, forearms, and legs of children in Newburgh, N. Y., six years after the start of water fluoridation. These X-rays showed no differences which could be attributed to ingested fluoride, and, in addition, blood counts and urinalyses revealed no evidence of any untoward effects.

3. Does fluoride affect the rate of growth of newly forming bone? This seemed to us to be another important question to be answered concerning the effects of fluoride. Elongation of a long bone, such as the tibia or shin bone, occurs at both ends. One of our studies in rats involved measurement of the rate of growth of both ends of the tibia. The data are charted in chart 11. Some of the rats received distilled water, and some received 10 parts per million of fluoride. There was no difference in the rate of growth at either the upper or the lower end of the tibia as a result of fluoride ingestion.

I should like now to summarize the five major points brought out in my statement.

1. Many foods contain appreciable amounts of fluoride. This is particularly true of teas, meats, and fish.

2. Even with fluoride in water at level 4 to 5 times greater than that advocated for caries prevention, there was no effect on bone development or fracture experience.

3. Both children and adults excrete 1 part per million of fluoride in the urine when the drinking water contains an equal concentration

of the element; moreover, such excretion by the kidney is the same for both naturally occurring and added fluoride.

4. It appears that bones gradually lose their capacity to store fluoride; after an initial adjustment to fluoride ingestion, a constant level is reached, and no further appreciable deposition occurs.

5. Low concentrations of fluoride had no effect on the growth rate of the tibia.

This statement has touched upon only a small fraction of the biochemical studies on fluoride metabolism which have been reported in the lituerature. These studies support a convincing body of scientific evidence that fluoride, at a concentration of 1 part per million in drinking water, presents no health hazard.

Mr. HESELTON. Before we leave Dr. Zipkin's statement, I wonder if I could ask a question?

Mr. HALE. Perhaps these gentlemen would want to proceed as a unit with their whole testimony. However, if you have a short question——

Mr. HESELTON. Where you say: "Many foods contain appreciable amounts of fluoride. This is particularly true of teas, meats, and fish," as I recall it, the only specific food that you mentioned was a pound of canned mackerel, which "may provide as much fluoride as 15 quarts of drinking water containing 1 part per million of fluoride, or 12 to 15 milligrams."

Have you available similar analysis of other kinds of teas, and fish, and meats, that you could provide for the committee?

Dr. ZIPKIN. Yes, sir. I think figure 2 has an itemized list of the content in parts per million of shrimp, sardines, salmon.

Mr. HESELTON. That is all.

Mr. PRIEST. If the chairman will permit one further question.

Doctor, I assume that according to your statement, tea contains 30 to 60 parts per million. In other words, if I might put it this way, what would a glass of tea made from water that is not possessed of fluoridity contain as compared with a glass of water with 1 part per million added to the water?

Dr. ZIPKIN. I think I understand your question. I think your interest is in how much fluoride is in, how much fluoride is present in a cup of tea if you drank it. Approximately a tenth of a milligram of fluoride would be present in a cup of tea

Mr. HALE. That would depend on how strong the tea was, wouldn't it?

Dr. ZIPKIN. This is an average of a number of teas, and if you happened to pick up a pound of tea a cup of the brew should fall within this range and represent roughly a tenth of a milligram.

Dr. KNUTSON. I would like to turn to a consideration of some of the studies which have been done on the general reaction of the body to fluoride ingestion, specifically as it relates to the development of soft tissue pathology and certain acute and chronic diseases.

In a comprehensive 10-year evaluation of the possible physical effects of continued ingestion of a water with a naturally high fluoride content, staff members of the National Institute of Dental Research conducted medical examinations on several hundred persons residing in Bartlett and Cameron, Tex. Bartlett has 8.0 parts per million of fluoride in its supply; Cameron has 0.4. The clinical and laboratory

findings showed no difference between the towns during the 10-year period, except that mottled enamel was common in Bartlett. Dr. Leone, the principal investigator on this survey, is here with me. In his discussion of the general medical aspects of fluoride ingestion, he will present the details of the Bartlett-Cameron study. Dr. Leone will also discuss mechanisms by which the body quickly and effectively reduces the fluoride level of blood and soft tissues.

Dr. Leone?

Dr. LEONE. Dr. Knutson, Mr. Chairman, members of the committee, there is much evidence that prolonged ingestion of fluorides is not injurious to health. Some of the evidence has been gained indirectly—for example, through comparative mortality studies. In this statement, I wish to review some investigations that have established the safety of fluoride ingestion through direct measurement of the medical effects.

The Bartlett-Cameron study: The principal study I should like to discuss was conducted by the United States Public Health Service in the towns of Cameron and Bartlett, Tex., over the 10-year period, 1943–53. The purpose was to detect, in a readily observable population group, any effects of long-continued ingestion of water containing an unusualy large amount of fluoride.

Bartlett was selected as the experimental town because the natural fluoride level of the local water supply was one of the highest in the Nation—8 parts per million of naturally occurring fluoride. This level, you will recall, represents 8 times the amount recommended for caries prevention. Cameron, comparable in size, location and other characteristics, was the control town with 0.4 part per million of fluoride in the water supply.

The 237-study participants were about evenly distributed between the 2 towns. They were persons who had resided in their respective communities for a minimum of 15 years prior to 1943. The average length of residence, at the end of the study period, was 37 years for the Bartlett group; 38 years for those in Cameron. Ages of the participants ranged from 15 to 68 years at the beginning of the study.

Procedure: Each participant, following a review of his medical history since birth, received in 1943 a complete medical and dental examination. Attention was given to the eyes, ears, kidney, liver, bones, thyroid, cardiovascular system, and other sites. The studies included appropriate X-rays and laboratory tests on blood and urine. The entire battery of clinical examinations and laboratory tests, together with a review of medical experience during the 10-year period, was repeated in 1953 for all the original participants, with the exception of 18 deceased. The staff was even able to reexamine those who had moved from their respective towns.

The study was carefully planned and conducted to permit a detailed comparison of the health status of the two groups in 1943 and 1953. Not only could persons be compared within and between the groups, but a single individual could be compared with himself over a period of 10 years. The study has therefore contributed substantially to our basic understanding of the clinical effects of excessive fluoride exposure.

Findings: Analysis of the data produced the following conclusions:

(1) The medical characteristics of the 2 groups did not differ more than would be expected for 2 comparable towns without an excess of fluoride in either water supply;

(2) The occurrence of mottled enamel, as would be expected, was significantly greater in Bartlett; and the incidence of cardiovascular disease was higher in Cameron—an observation unrelated to fluoride ingestion;

(3) There was no significant difference between the age-adjusted death rates in the two towns;

(4) The 2 groups showed no significant difference over the 10-year period with respect to changes in blood pressure, arthritic conditions, eyes, thyroid disorders, hearing, tumors or cysts, bones and bone fractures, and urinary system; all of which are shown in table 1, of which you have a copy attached to this statement.

(5) The only difference in frequency rates of abnormal laboratory findings was in the counts of white blood cells, which tended to be higher in Bartlett. (See table 2.) This difference, when viewed in light of clinical circumstances, does not suggest an association with fluoride intake.

When these findings for the 2 groups are critically reviewed, it is clear that the only difference attributable to the excessive fluoride exposure is dental mottling in Bartlett.

Tissue studies: I should like also to call your attention to a long-term investigation on human tissues. It is another of the Public Health Service series of related studies on the effects of excessive fluoride ingestion. The findings are derived from microscopic and chemical analyses of bone and soft tissues taken at autopsy from persons who had ingested as much as 8 parts per million of naturally occurring fluoride in drinking water over a long period. In summary, this prolonged ingestion produced no detectable changes in structure nor impairments of function.

These findings are comparable with those from studies on animals. Only when highly toxic dosages are fed to animals can early effects of fluoride be detected. It is important to keep clearly in mind the difference between such concentrations and the 1 part per million of fluoride per day recommended for the prevention of dental caries.

An interesting case from our autopsy series illustrates the type of source material available to substantiate our conclusions on the physiological effects of fluoride. The case is uniquely important in that it permits a direct evaluation of fluoride effect on human tissues.

One of the participants of the 10-year study, a Bartlett resident for 50 years, had a stroke at age 78 and died shortly after the 1953 re-examination. The patient had been in excellent health up to the time of the stroke. For more than 10 years, she had had high blood pressure, which was related to a generalized arteriosclerosis, a condition common in persons of her age. The patient was otherwise without notable findings upon physical examination.

The patient's entire medical history and examination findings were reviewed. The X-ray survey of her bones, 1943 and 10 years later, gave evidence of an increase in bone density and coarseness of the internal bony structure, but there was no indication of physical im-

pairment, deformity, change in bone size, or any other damage not in keeping with her age. We have good evidence, incidentally, that such increased bone density and coarseness is beneficial, particularly in aged persons.

A complete autopsy was performed, and specimens were obtained from the skeletal system, heart and blood vessels, stomach, kidneys, brain, and from other soft tissues for microscopic examination and chemical analysis.

On analysis of the bone, the fluoride content in parts per million was 10 times that observed ordinarily in human bone from non-fluoride regions. This parallels the desirable increase in bone density previously mentioned. Microscopic examination of the soft tissues showed no impairment—no changes that could be associated with the ingestion of 8 parts per million fluoride for over 50 years.

The work of other investigators indicates that no soft tissue changes are observed even after prolonged ingestion of 300 times the amount of fluoride regarded as optimal for caries prevention.

Fluoride excretion: There is currently available an extensive body of knowledge on kidney function, particularly with regard to the excretion of halogens, the family of elements to which fluorine belongs. Dr. Zipkin has already referred to the kidney's efficiency in eliminating fluoride. This efficiency is so high that the halogens continue to be excreted even in the presence of severe heart disease or kidney damage. In fact, a patient with impaired kidney function would probably succumb to uremic poisoning long before the kidney lost its ability to transfer fluorides.

The studies I have reported are among the most recent and reliable. They yield direct, conclusive information on the medical aspects of fluoridation in humans in good health and those who are not. The conclusion to be drawn from all these studies, which utilize a wide variety of medical approaches, is that fluoridation of public water supplies at the recommended level (1 part per million) is absolutely safe.

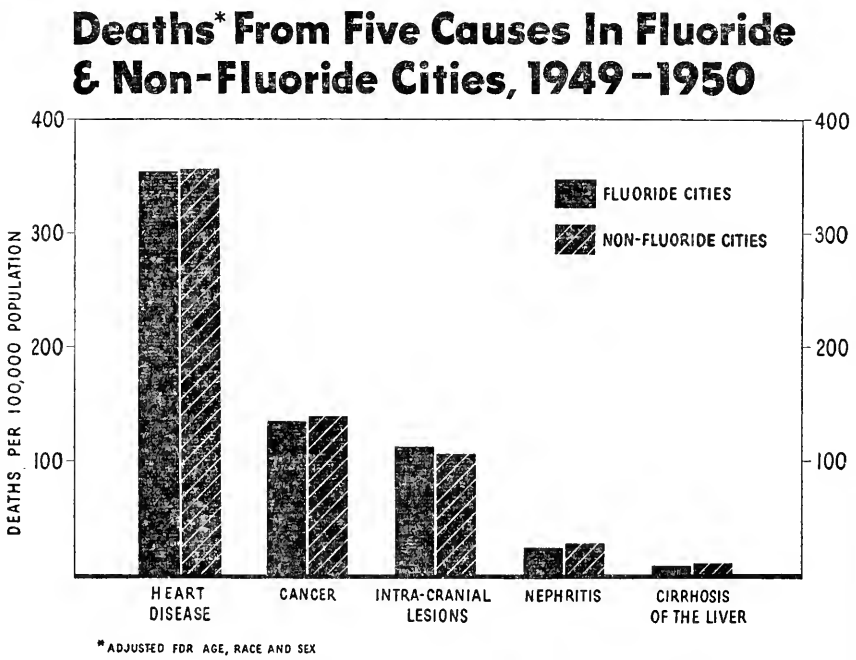
Dr. KNUTSON. Some years ago there was a flurry of excitement about a possible relation of fluoride ingestion to cancer in mice, based on a preliminary report of observations made at the University of Texas. Subsequent studies gave no evidence of such a relationship. On the contrary, reports by Dr. H. S. Fleming of Yale University and Dr. W. D. Armstrong of the University of Minnesota suggest that consumption of fluoride-bearing water tends to retard the development of tumors in mice.

In an interesting study, Dr. M. M. Black and his coworkers at the New York Medical College fed fluoride to 70 persons with incurable illnesses, largely cancer. The amounts of fluoride given to these persons for a period of 4 to 6 months ranged from 80 to 400 milligrams a day. The average adult dose was 320 milligrams daily—the equivalent of 320 times the amount recommended for water fluoridation. This extraordinarily high intake did not produce any observable acute or chronic toxicity. Microscopic examinations of organs after death from the illness failed to reveal any damage to soft tissues. Although the elements of this experiment are rather far removed from ingestion of water containing the concentration used for control of dental decay,

it is mentioned to show that surprisingly large quantities of fluoride have been taken into the body, and under very careful scrutiny over long periods of time, without detectable physical effects.

Another approach to measuring the influence of fluoride ingestion is to evaluate mortality data in relation to exposure to fluoride-bearing water. Studies of the incidence of deaths from certain diseases in fluoride and fluoride-free areas reveal no pattern which would suggest that consumption of fluoride-bearing water influences mortality in these communities.

CHART 6



The next chart shows the distribution of mortality rates from heart disease, cancer, intracranial lesions, nephritis, and cirrhosis of the liver in 32 cities in the United States with fluoride and 32 with fluoride-free water supplies. As you can see, no discernible difference exists between the mortality rates for these two groups of cities.

These data have been verified and supported by observations made independently in Wisconsin, Illinois, and Texas, and in many of the areas where fluorides occur either in excess or in optimum concentrations.

In a continuing evaluation of mortality data obtained in our study project in Grand Rapids, Mich., we found no indication of changes in mortality when compared with those from the control city of Muskegon and with data from the Nation as a whole.

In the next four charts (7–10) comparison of mortality rates for Grand Rapids, Muskegon, and the Nation, for a period just prior to and during fluoridation in Grand Rapids—Muskegon did not have

CHART 7

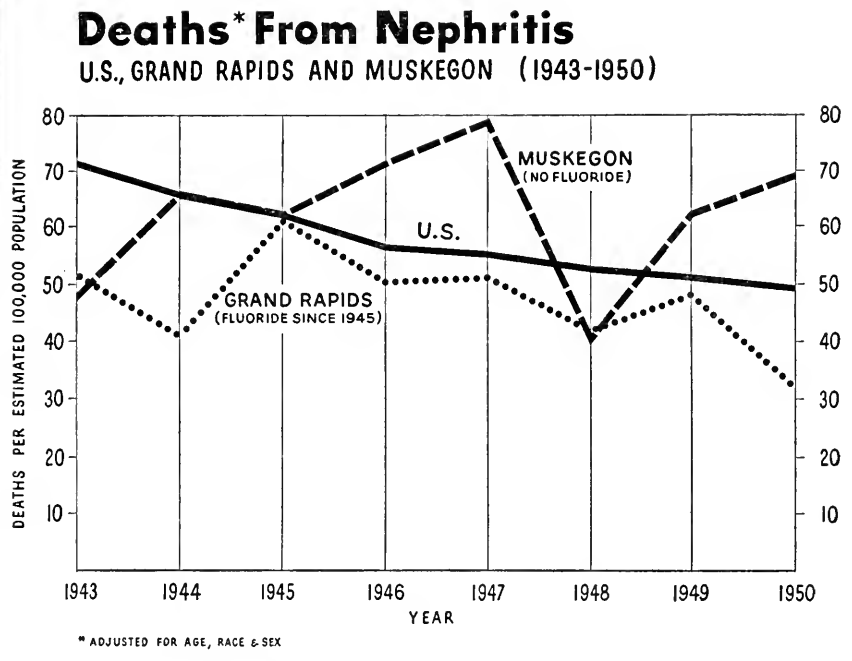


CHART 8

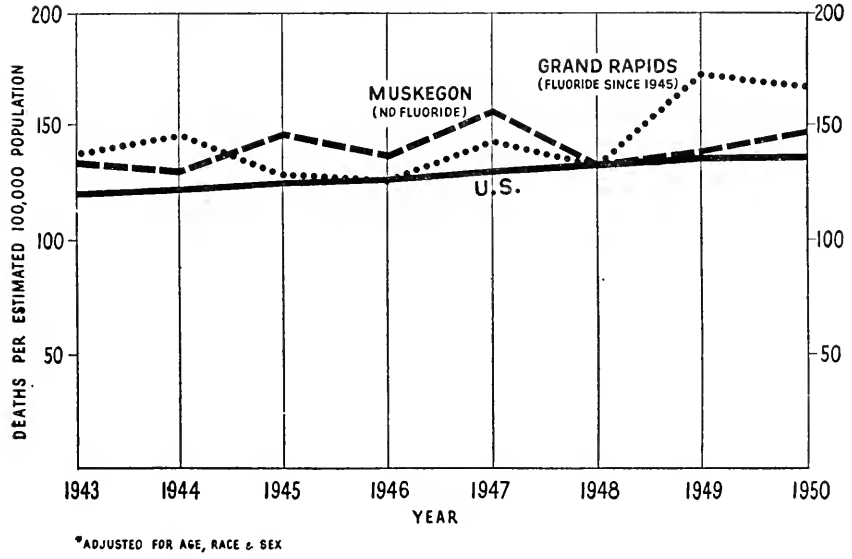


CHART 9

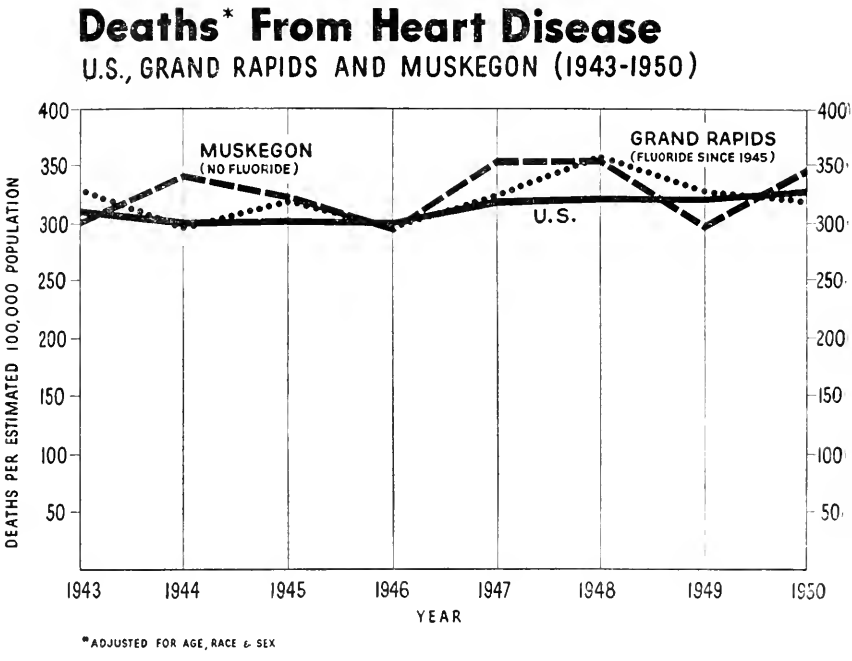
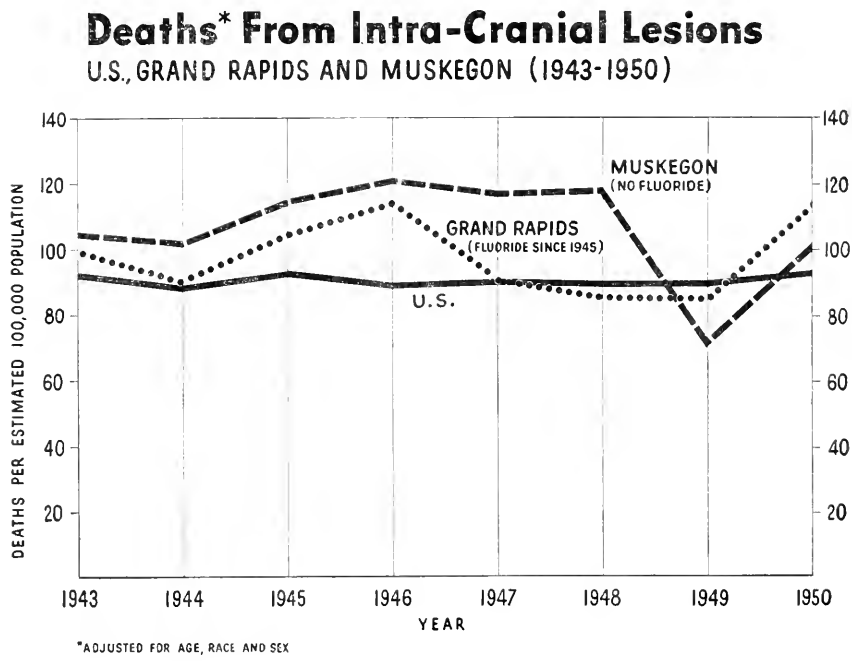


CHART 10



fluorides in their water supply—are shown first for nephritis. And you will notice the variation around this principal line for the United States as a whole. However, those are variations that are to be expected for deaths in a community of the size of Muskegon, for example, of 50,000 population, but they are not significantly different than those for the Nation, even though you will note that for Grand Rapids the rates are fairly consistently below those for Muskegon.

Next, for cancer, again no significant difference between Grand Rapids and the control city of Muskegon.

Next, for heart disease, again no difference between those two communities.

And last for intracranial lesions——

Mr. HALE. Will you explain in passing what an intracranial lesion is?

Dr. KNUTSON. I am a dentist. I have Dr. Leone here with me, who is a physician. I will pass that question to Dr. Leone.

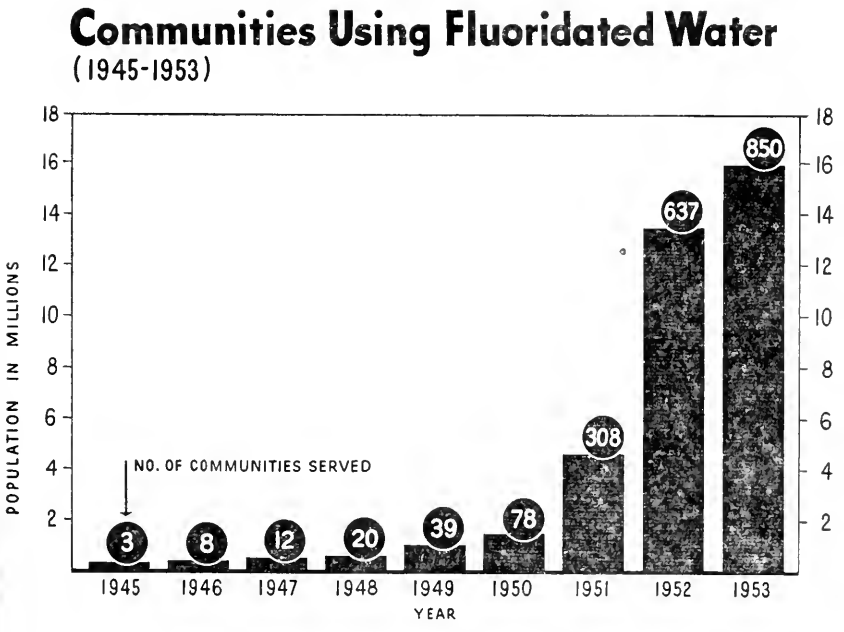
Dr. LEONE. Intracranial lesions in this particular case pertain to those instances where lesions are associated with what we call neoplasms, forms of cancer; or other cerebral lesions which occur in the skull.

I am sorry if I haven't made that clear. Intracranial lesions would be anything occurring above the jaw line, let us say, and can be of the nature of a stroke. There are many different types. That is why I use the general term.

Mr. HALE. For example, would a brain tumor be an intracranial lesion?

Dr. LEONE. That is right, sir.

CHART 11



Dr. KNUTSON. No significant differences can be seen in deaths from these causes either before or after 1945, when fluoridation was started in Grand Rapids.

As you know, many American communities have already instituted controlled fluoridation. Chart 11 shows the number of communities which have decided to supplement their water supply, and the populations residing in these communities. The numbers in the red circles are the number of communities. You will note that in 1950 there were 850 communities. The scale on the right is the population in millions. In other words, at the end of 1953, 850 communities were fluoridating their water supplies, serving approximately 16 million people.

There has been a slow but consistent increase in the use of this procedure since 1945. In the United States today there are about 17 million people in over 900 communities consuming water which has been supplemented with fluoride. These communities are using in a precise manner something which nature has distributed irregularly.

Now, I would like to discuss briefly the role of the Public Health Service with respect to the Nation's dental health problems in general, and to fluoridation in particular. Dental disease is of considerable public health significance. Probably no other disease category affects so large a proportion of the population. Dental defects accounted, for example, for 21 percent of the rejections among the first 2 million men called for service in World War II.

The most important single type of dental disorder is dental caries, or tooth decay. Neglect and the vast backlog of accumulated needs have led to loss of teeth, to impaired dental function, and to general ill health.

Although less than one-third of the American people receive adequate dental care, the economic burden of dental disease is a sizable one. In 1953, the American people spent about $1.6 billion for dental care, about one-sixth of the total expenditure for personal health services in the Nation. This sum, an all-time high in dental expenditures, is but a fraction of the estimated amount needed to provide adequate care for the American people. Even if there were an unlimited amount of money available for dental care, there are simply not enough dentists to furnish the required volume of services. Thus, there is little possibility that the Nation's dental health problem can be solved in the near future solely by increasing the correction of existing defects.

This points up the needs very sharply. There are several, including the need to conduct research into the basic problems of dental diseases and disorders, to stretch the limited supply of dental manpower, and to use all available resources for a maximum contribution to dental health. Most prominent, however, is the need to develop, perfect, and apply more effective methods of preventing dental disease.

As you know, the Public Health Service is charged by law to conduct health research, to develop and test measures for the prevention and control of disease, to help States and communities apply those measures, and to disseminate public health information. In accordance with this mission, we have been active in each of the areas of need I have just mentioned. We have conducted studies, for ex-

ample, on the use of dental assistants and multiple chairs in the dentist's office. This has enabled dentists to increase their productivity and to treat more people. We are doing research on diseases of the gums and the bony supporting structures. Through State and local health agencies, we work with schools and clinics to encourage periodic dental examinations, to apply proper methods of mouth hygiene, and to promote desirable dietary habits.

In addition, as in all public health programs, we provide technical and advisory services for official health agencies. In all of this work, we attempt to translate new knowledge into practical public health procedures. Our job, in other words, is to help apply research and laboratory findings for the benefit of all the people.

One such finding, as I have pointed out, is fluoridation. This measure has a great potential for improving health, lowering dental bills, and for reducing the Nation's dental needs to manageable proportions. Consequently, public health workers have given their wholehearted endorsement to this procedure. In the Public Health Service, as in health agencies throughout the Nation, fluoridation is one part of a diversified and balanced approach to meeting our total dental health needs.

Fluoridation followed the typical pattern in the development of a public health technique. It met all the tests. It was studied over a long period of time, both by research workers in the Public Health Service and by other investigators. It was subjected to intensive field testing for safety and practicability. Its effects were demonstrated, checked, and rechecked. Practical methods for its application were worked out and perfected in considerable detail. And it finally became part of the public health armamentarium, along with other preventive techniques.

The responsibilities of the Public Health Service were clear: to make the facts about fluoridation known to State and local health agencies, and to provide them with technical assistance in the application of this important public health advance. In view of the convincing amount of scientific evidence, we could do no less and still meet our obligations as a national health agency.

As with all public-health procedures, the decision on fluoridation rests and, in our opinion, should continue to rest, with the local community. In public-health works, it could not be otherwise, nor would we wish it to be otherwise. All local health activities, from the operation of clinics to the enforcement of sanitary regulations, are the responsibilities of the community. We believe that there is no justification for any Federal intervention into local health matters. We feel certain that in fluoridation, as in other health matters, the combination of professional public health leadership and enlightened citizen interest will insure the decision that will enable communities to go forward in health.

To summarize, Mr. Chairman, we cannot accept the premise that fluoridation of public water supplies constitutes a hazard to public health. On the contrary, we believe that its safety has been clearly established and that its potential for improving dental health warrants the serious consideration of all communities concerned with progressive health measures. We believe, however, that the determi-

nation of proper action in this matter can and should be left for each community to decide for itself, and that no Federal controls are necessary or desirable. We therefore recommend against enactment of H. R. 2341.

(Charts and tables referred to are as follows:)

FIGURE 1.—*Fluorine reported in dry substance of food*

	Fluorine parts per million
Honey	1.00
Cocoa	.50– 2.00
Milk chocolate	.50– 2.00
Chocolate (plain)	.50
Tea (various brands)	30.00–60.00
Cabbage	.31– .50
Lettuce	.60– .80
Spinach	1.00
Tomatoes	.60– .90
Turnips	.20
Carrots	.20
Potato (white)	.20
Potato (sweet	.20
Apples	.80
Pineapple (canned)	.00
Orange	.22

FIGURE 2.—*Fluorine reported in food as consumed*

	Fluorine parts per million
Pork chop	1.00
Frankfurters	1.70
Round steak	1.30
Oysters	1.50
Herring (smoked)	3.50
Canned shrimp	4.50
Canned sardines	7.30–12.50
Canned salmon	8.50– 9.00
Fresh fish	1.60– 7.00
Canned mackerel	26.89

FIGURE 3.—*Estimated fluorine ingested in food and in drinking water containing 1 part per million fluorine*

[Milligrams]

Age (years)	From fluoride water	From food	Total daily
1 to 3	0.4–0.5	0.03–0.30	0.4–0.8
4 to 6	.5– .8	.04– .40	.6–1.1
7 to 9	.7– .9	.05– .45	.7–1.4
10 to 12	.8–1.2	.06– .60	.9–1.8

FIGURE 4

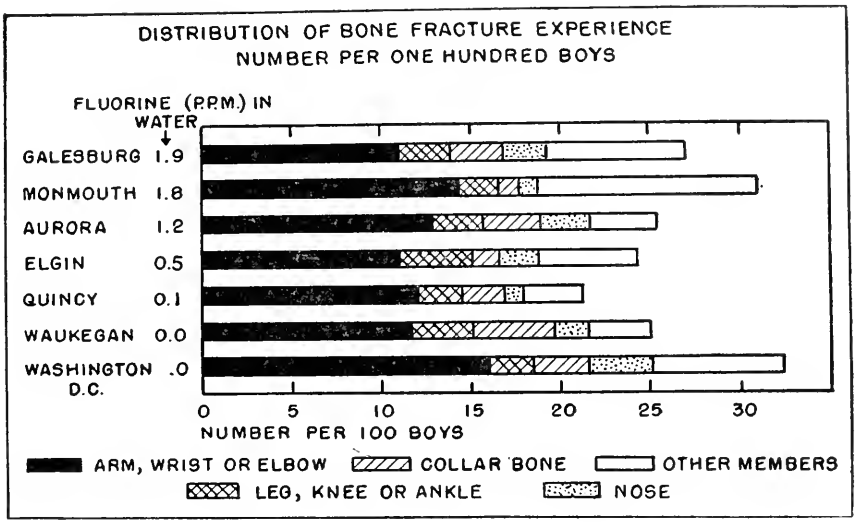


FIGURE 5

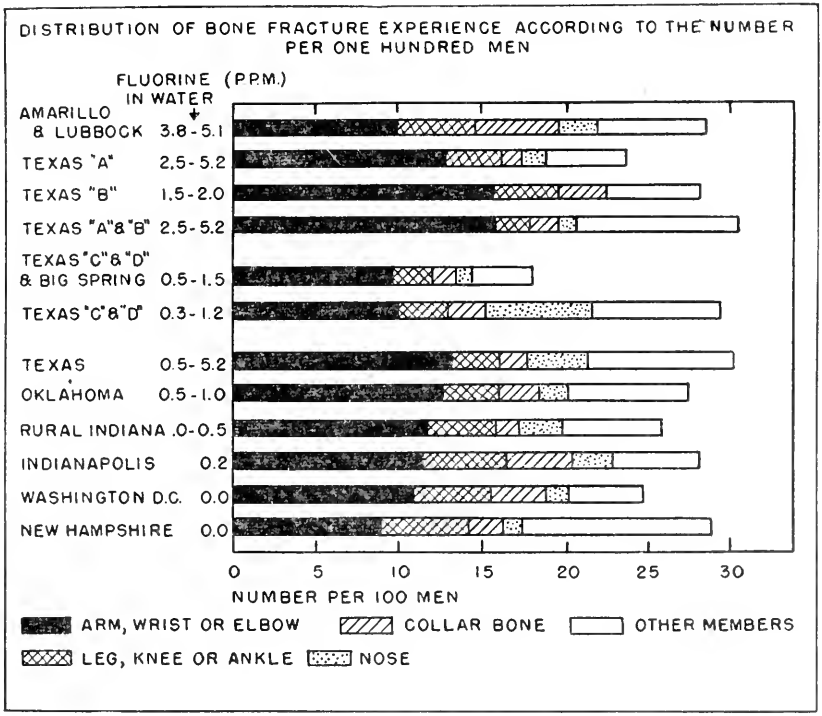


FIGURE 6

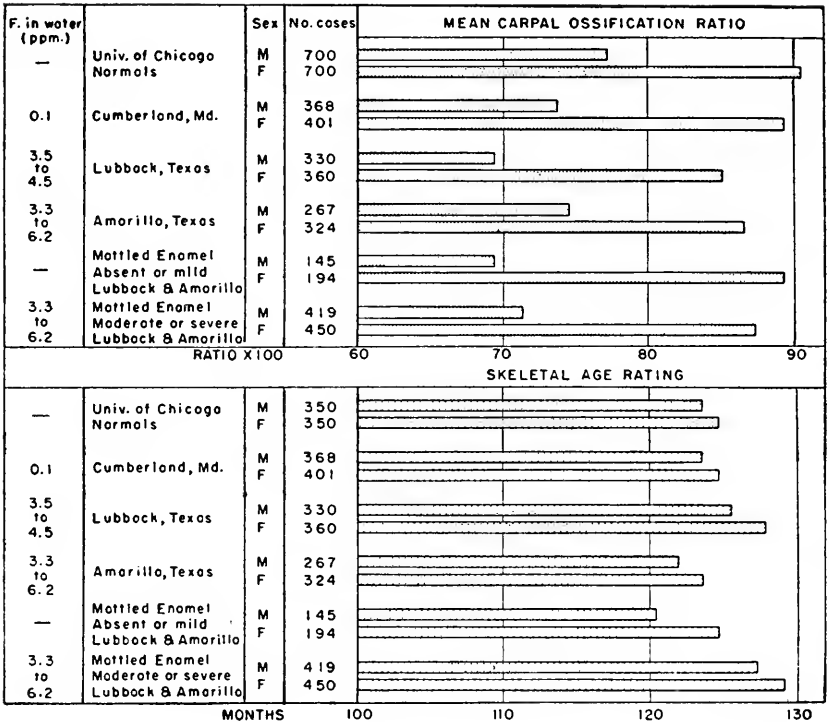

F. in water (ppm.)
Sex
No. cases
MEAN CARPAL OSSIFICATION RATIO
—
Univ. of Chicago Normals
M 700
F 700
0.1
Cumberland, Md.
M 368
F 401
3.5 to 4.5
Lubbock, Texas
M 330
F 360
3.3 to 6.2
Amarillo, Texas
M 267
F 324
—
Mottled Enamel Absent or mild Lubbock & Amarillo
M 145
F 194
3.3 to 6.2
Mottled Enamel Moderate or severe Lubbock & Amarillo
M 419
F 450
RATIO X 100
60
70
80
90
SKELETAL AGE RATING
—
Univ. of Chicago Normals
M 350
F 350
0.1
Cumberland, Md.
M 368
F 401
3.5 to 4.5
Lubbock, Texas
M 330
F 360
3.3 to 6.2
Amarillo, Texas
M 267
F 324
—
Mottled Enamel Absent or mild Lubbock & Amarillo
M 145
F 194
3.3 to 6.2
Mottled Enamel Moderate or severe Lubbock & Amarillo
M 419
F 450
MONTHS
100
110
120
130

FIGURE 7

FLUORINE CONTENT OF URINE IN RELATION TO FLUORINE IN DRINKING WATER

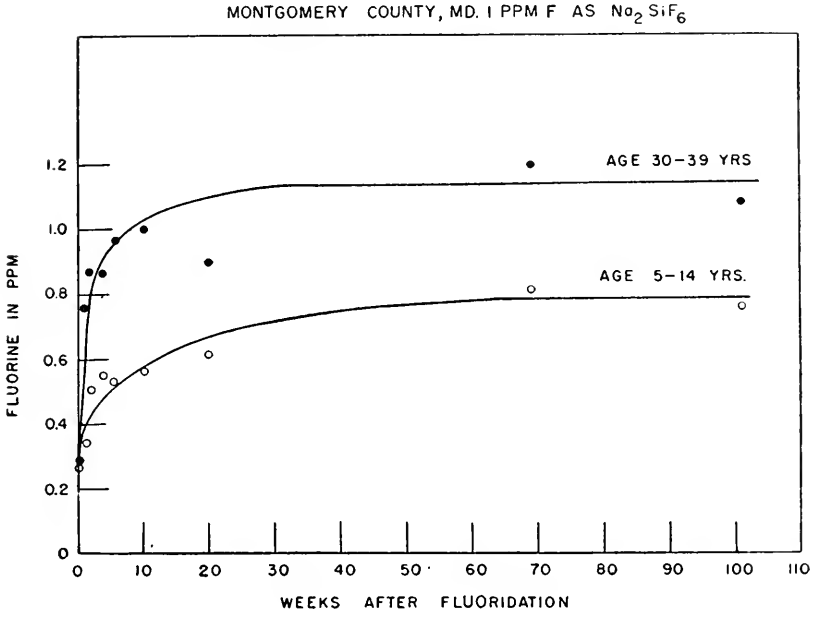


FIGURE 8

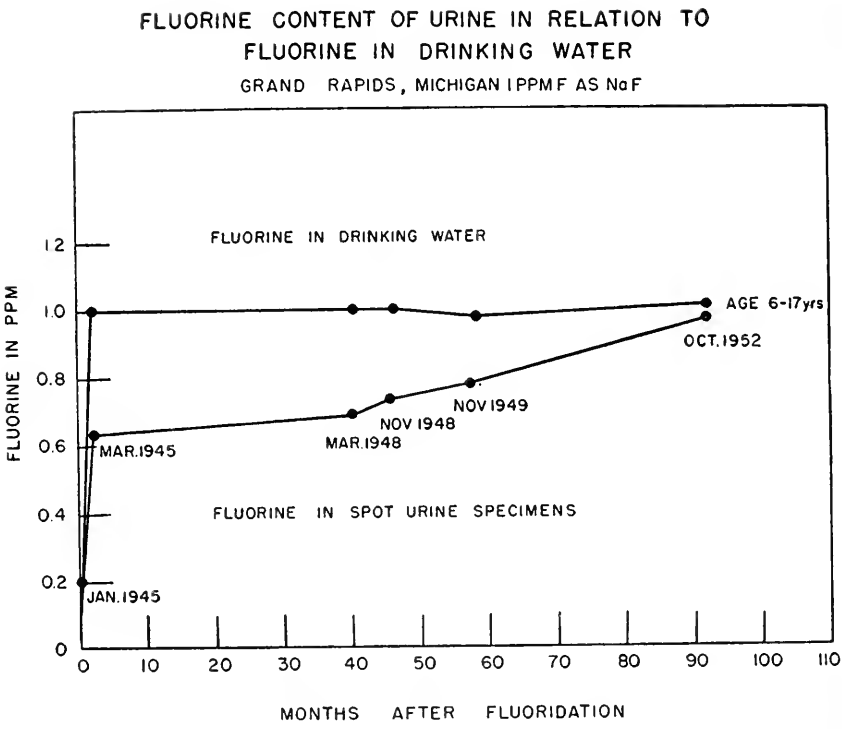


FIGURE 9

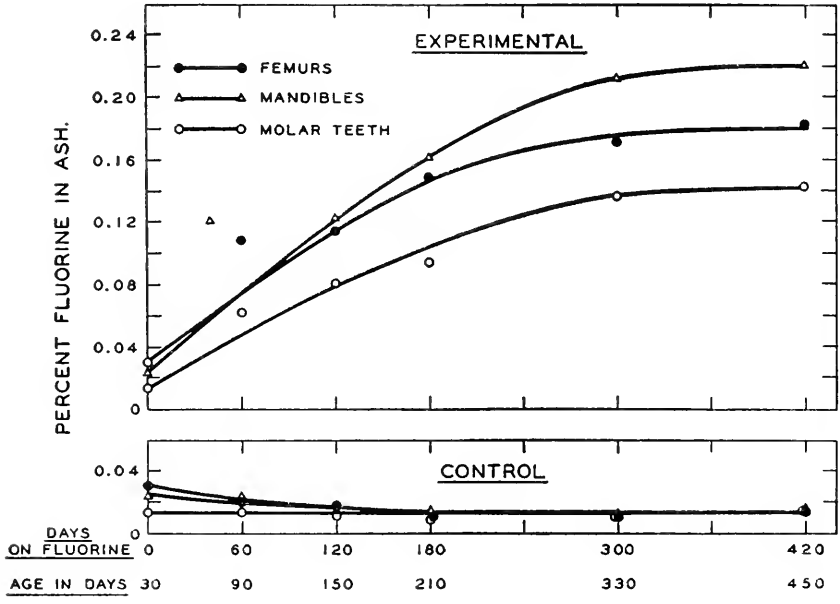


FIGURE 10

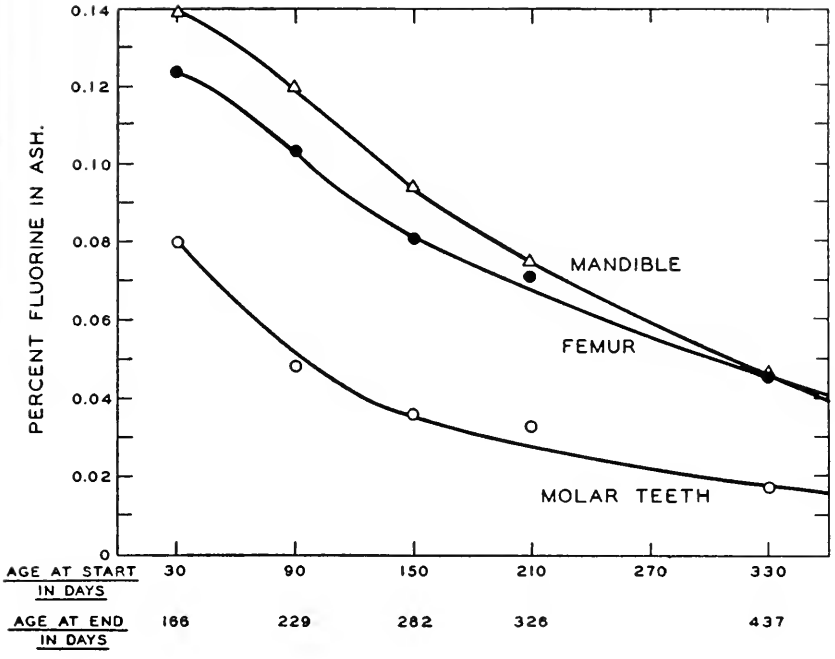


FIGURE 11

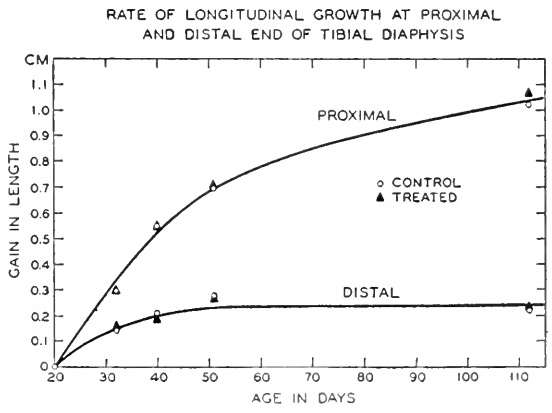


TABLE 1.—*Incidence of abnormal clinical findings, 1943–53*

[Participants residing in study area for the ten-year period]

Characteristic studied	Bartlett			Cameron			Significant difference (P=0.05)
	Number at risk	Number abnormal	Rate (percent)	Number at risk	Number abnormal	Rate (percent)	
Arthritic change	80	11	13.8	89	13	14.6	No.
Blood pressure:							
Systolic 151 mm/Hg and over	58	18	31.0	81	20	24.7	No.
Diastolic 100 mm/Hg and over	73	11	15.1	83	11	13.3	No.
Pulse pressure 75 mm/Hg and over	70	9	12.9	89	16	18.0	No.
Bone changes:[1]							
Density [2]	74	7	9.5	81	2	2.5	No.
Coarse trabeculation	74	4	5.4	81	2	2.5	No.
Hypertrophic	74	8	10.8	81	6	7.4	No.
Spurs	74	1	1.4	81	4	4.9	No.
Osteoporosis	74	5	6.8	81	10	12.3	No.
Bone, increased density (new cases)	66	1	1.5	79			
Cataract and/or lens opacity	79	8	10.1	85	12	14.1	No.
Thyroid	74	3	4.1	82	6	7.3	No.
Cardiovascular (except uncomplicated hypertension)	80	10	12.5	92	22	23.9	Yes.
Hearing (decreased acuity)	72	14	19.4	78	10	12.8	No.
Tumor and/or cysts	80	12	15.0	92	10	10.9	No.
Fractures	80	12	15.0	92	7	7.6	No.
Urinary tract calculi	72	14	19.4	76	12	15.8	No.
Gall stones	73	0	0	80	1	1.2	No.

[1] Bone changes determined by simultaneous reading of identical views of X-rays taken in 1943 and repeated in 1953.

[2] Bartlett: 4 increased density, 3 decreased density. Cameron: 2 increased density.

TABLE 2.—*Prevalence of abnormal laboratory and dental findings, 1943 and 1953*

[Participants residing in study area for the 10-year period]

Laboratory determination	Year	Bartlett			Cameron			Significant difference (P=0.05)
		Number examined	Number abnormal	Rate (percent)	Number examined	Number abnormal	Rate (percent)	
Hemoglobin	1943	116	34	29.3	121	[illegible] 37	30.6	No.
	1953	79	20	25.3	83	26	31.3	No.
Hematocrit	1943							
	1953	79	5	6.3	82	7	8.5	No.
Red blood count	1943	116	25	21.6	121	24	19.8	No.
	1953	80	6	7.5	85	2	2.4	No.
White blood count	1943	116	17	14.7	121	5	4.1	Yes.
	1953	78	11	14.1	82	7	8.5	No.
Differential count:								
Neutrophiles	1943	71	15	21.1	71	6	8.5	Yes.
	1953	78	23	29.5	82	13	15.9	Yes.
Lymphocytes	1943	71	2	2.8	71	1	1.4	No.
	1953	78	35	44.9	82	36	43.9	No.
Eosinophiles	1943	71	0	0.0	71	0	0.0	No.
	1953	78	6	7.7	82	14	17.1	No.
Sedimentation rate	1943							
	1953	79	31	39.2	83	22	26.5	No.
Blood calcium	1943							
	1953	79	9	11.4	66	7	10.6	No.
Serology (S. T. S.)	1943	71	2	2.8	71	3	4.2	No.
	1953	84	2	2.4	95	2	2.1	No.
Dental fluorosis	1943	88	34	38.6	102	1	1.0	Yes.
	1953	45	10	22.2	64	1	1.6	Yes.
Urine albumin	1943	115	3	2.6	121	10	8.3	Yes.
	1953	77	5	6.5	85	12	14.1	No.
Urine glucose	1943	115	2	1.7	121	4	3.3	No.
	1953	77	0	0	85	1	1.2	No.

Mr. HALE. Thank you very much, gentlemen.

Are there questions?

We will place in the record at this point a letter of May 27, 1954, from Congressman Hoffman.

(The letter referred to is as follows:)

CONGRESS OF THE UNITED STATES,
HOUSE OF REPRESENTATIVES,
Washington, D. C., May 27, 1954.

Hon. CHARLES A. WOLVERTON,
Chairman, Interstate and Foreign Commerce Committee,
House of Representatives, Washington, D. C.

MY DEAR COLLEAGUE: As I have indicated to you before, I am opposed to the limitation which H. R. 2341 would impose on the power of local communities to fluoridate water.

The supporters of H. R. 2341 have made frequent use of the phrase, "illegal mass medication." The use of the phrase implies that all mass medication is illegal, but that is not correct because it is, of course, legal to require all citizens to be vaccinated against smallpox.

Perhaps the proponents of H. R. 2341 mean that some forms of mass medication, such as vaccination, are legal, but that fluoridation of the water supply is not. Even this conclusion is incorrect, since States and cities have the right and duty to safeguard the people's health. Any steps they may take to do so are lawful provided they are not clearly arbitrary or irrational.

When the American Medical Association and the American Dental Association, as well as recognized local professional groups and research organizations, unanimously state the fluoridation is useful in preventing dental decay, that no harm is to be expected from employing it, and supply evidence in support of their opinions no community can be accused of being arbitrary or irrational if they approve fluoridation of their water supply.

I firmly believe that the Federal Government should not interfere with State or local action in this matter, and for that reason, I am opposed to the passage of H. R. 2341.

With kindest personal regards,

Sincerely yours,

RICHARD W. HOFFMAN, M. C.

Mr. PELLY. Dr. Knutson, would you tell how the charts were adjusted on account of sex, age, and race? Those various charts that were shown?

Dr. KNUTSON. For the deaths?

Mr. PELLY. Yes, the mortality rate.

Dr. KNUTSON. That is done, Mr. Congressman, in order to take care of the differences in the ages of people in different communities. So when we say age-adjusted, that means that the calculations of the death rates are based on the given age categories of the individuals in the communities. In one community you may have a relatively young population; in another a relatively old population. If you did not adjust for age, you would come out with an incorrect conclusion.

Mr. PELLY. How about race, and also sex.

Dr. KNUTSON. Yes, those are also adjusted for, because there are differences.

Mr. PELLY. Women live normally longer than men?

Dr. KNUTSON. Yes.

Mr. PELLY. It must have been quite an adjustment.

Dr. KNUTSON. Yes, it is. It is a routine procedure in vital statistics to adjust for those factors.

Mr. PELLY. Doctor, would you state for the record the date when the policy of the Public Health Service was first decided upon to promote fluoridation on the local level?

Dr. KNUTSON. Yes, sir; I shall be glad to. In April 1951.

Mr. PELLY. Not before that did the Public Health Service, then, encourage local communities to fluoridate their water?

Dr. KNUTSON. No, sir. The study in Grand Rapids was started in 1945, in cooperation with the Michigan State Health Department, the University of Michigan, and the local health department; but that was on a study pilot-program basis.

Mr. PELLY. In other words, you participated in a study, but you did not promote it?

Dr. KNUTSON. That is correct, sir.

Mr. PELLY. I notice that some of the studies referred to were not completed until 1953. In other words, as to the 10-year study that was explained to us, at that time, then, in 1951, when you began the policy, you had not the benefit of the 10-year study?

Dr. KNUTSON. That is correct, sir. But we did have the cross-sectional data collected in 1943; the first observations made in Bartlett and Cameron were made in 1943 and available for analysis, and they were analyzed. And, as Dr. Leone indicated, at that time in this community of Bartlett, where they have eight times the amount of fluoride naturally that we are considering here, there was no evidence of any deleterious effects. But the study continued on a followup basis for 10 years.

Mr. PELLY. I want to confess I have always been a little suspicious of departments of the Government gaining by policy what they can't by law. I am not specifically referring to this program, but in general I am a little suspicious, and I was wondering how you arrive at a policy. Who decides that suddenly you are going to promote a program which you consider in the interests of the health of the American people, and how is that policy arrived at in the Department?

Dr. KNUTSON. There are many factors taken into consideration, Mr. Congressman, in order to determine a policy of this nature. It involves getting the opinions and the knowledge of a vast number of people who have studied this matter, in order to arrive at that decision. We, for instance, are assisted by the advice and recommendation of the State and Territorial dental directors, who are employees of the State health departments. We are guided by the experts who are on the council of dental health and the council on dental therapeutics of the American Dental Association. So that the policy was arrived at after a thorough scrutiny of the opinions and judgments of these experts in the field.

Mr. PELLY. When did the American Dental Association, for example, adopt a policy in favor of fluoridation?

Dr. KNUTSON. Officially, as I recall, in the fall of 1950.

Mr. PELLY. In other words, you considered their position.

Dr. KNUTSON. Ours came in April of 1951.

Mr. PELLY. They were ahead of you, then.

Dr. KNUTSON. That is correct.

Mr. PELLY. In the Department itself, though, is that a matter of your decision, or of the Surgeon General, or who makes the final determination?

Dr. KNUTSON. A number of the people; Dr. Dean, for instance, now retired from the Public Health Service, was very active in this field of fluoridation; Dr. Zipkin here; Dr. McClure; and Dr. Arnold. We

have had a series of people in the Public Health Service who have been working for, we will say, from 5 to 25 years on this subject.

We also have available the advice and suggestions, recommendations, and judgment of the friends of those people, the acquaintances, and also the professional associates in universities and other places.

Mr. PELLY. I was thinking: If some person got into a high office in your Department and had a lot of friends who were advocating something that might be wrong, and he was a zealot on that subject, could he put that program into effect and make it policy in the Department without some consideration by other people? In other words, what I am trying to get from you is: Do you sit down at a conference table and formally adopt a policy?

Dr. KNUTSON. Yes, sir. Yes, there is a conference among these people with competence in the field, people who have worked in the field, who have demonstrated their ability and competence in the field from a research standpoint; on the medical side, from the standpoint of biochemistry; and otherwise.

Mr. PELLY. Did the State health officials and the advisory council approve of the general program in this case?

Dr. KNUTSON. Yes, sir. Some States were ahead. I believe the first in the country was Wisconsin. Because back in 1945, the State health authorities in Wisconsin had already sponsored a program of fluoridation in the State of Wisconsin.

Mr. PELLY. I was thinking there was a health council which meets here in Washington to advise the Surgeon General occasionally, and whether this council might have passed on a program such as this.

Dr. KNUTSON. Yes. There is an Advisory Dental Research Council which advises the Surgeon General. It was among the groups which considered this matter.

Mr. PELLY. And this council considered it prior to April 1951, when it became the official policy of the Department; is that correct?

Dr. KNUTSON. That is correct. In other words, it is not a 1-man decision, or a 2-man decision. There are a wide number of individuals' judgments that are brought into this decision.

Mr. PELLY. Now, I would like to, in layman's language, refer back to one of the statements made by a witness this morning that I thought I understood, as meaning that fluoride encourages the deposit of calcium. Is that correct? In the bone structure?

Dr. KNUTSON. I believe that is correct. Dr. Leone, who is a physician in this field, though, should answer that.

Dr. LEONE. Generally speaking, that is so. We know that fluoride has an affinity for calcium, and calcium, of course, is deposited in the bone.

I say fluoride has an affinity for calcium, and calcium is automatically deposited in the bone, in the normal metabolism of the bone. And in the case of the high fluoride areas, perhaps a little more than normal is deposited, as I indicated.

Dr. ZIPKIN. I would like to perhaps supplement that answer from some data available in the literature, which states that in children who have lived on four parts per million of fluorine in the water there is no deviation in the calcium and phosphorus retention in these children.

If the bones are analyzed for calcium or phosphorus or the excreta are analyzed for calcium or for phosphorus, there doesn't seem to be any difference in that retention in kids living in a four-parts-per-million area.

In other wards, they will eliminate calcium in urine and feces like persons not living in such an area.

Mr. PELLY. I am interested in the adults, and I notice that a certain number of people now seem to get discs in their spine or tennis elbows or bursitis. Would that be due to calcium deposits, and could an extra amount be induced by too much fluoride?

Dr. LEONE. Our studies do not show any association with that sort of finding.

Mr. PELLY. Then going on to one of the other questions in my mind, and then I will let someone else ask questions. I am wondering whether studies have been made as to the ratio of stillborn cattle in areas which have an excess of fluoride in the water.

Dr. LEONE. I do have secondhand information on that, and the answer is: Definitely, no. In fact, a group in Tennessee that is running a large experiment has found that their animals on high fluorides are more fertile than those on low fluorides; I mean comparatively speaking.

Mr. PELLY. I think we had some statistics given us this morning that cattle were more subject to the toxicity of fluorides than humans. Would the one-millionth of one part of fluoride in water compare with the figure that was given us this morning for the toxicity danger point of cattle? In other words, if cattle drank water, Washington, D. C., water, would it be more fluoride than cattle should drink, in your opinion?

Dr. LEONE. Let me answer it in an indirect manner that I looked at a great number of cattle in the vicinity of Bartlett, and I never found any mottling or any evidence of fluoride effect. And I believe Dr. Zipkin can answer further in terms of actual experimental work on the ratio of fluoride effect in animals versus the human.

Dr. ZIPKIN. Dr. Mitchell, at the University of Illinois, has done extensive work on fluoride metabolism, particularly in farm animals. And he makes the statement that a toxic level for most farm animals as a rough estimate is about 100 parts per million.

That is, cows, swine, other farm animals, will tolerate up to that without any deleterious effects, such as going off feed, refusing to drink water, or other changes. Some species will vary from that. Rabbits will take a little more and chickens a little more before they show toxic changes.

Mr. PELLY. It was about 65 parts per million, as I recall, for cattle.

Dr. KNUTSON. As I understood that statement, it referred to a comparison of cattle with other animals, and not to humans. They are less sensitive than humans, far less sensitive than humans. But in relation to other animals, they are more sensitive.

Mr. PELLY. I think you have answered my question, because as I understood that statement, it was that cattle were much more sensitive to the effects of fluoride than humans. You are telling me, are you not, that they are not as sensitive?

Dr. KNUTSON. That is correct.

Mr. PELLY. I misunderstood the statement given before, then.

Thank you, Mr. Chairman.

Mr. HALE. Mr. Priest?

Mr. PRIEST. Dr. Knutson, in representing the Public Health Service, you oppose this bill that would prohibit local communities from fluoridation of water?

Dr. KNUTSON. Yes, sir.

Mr. PRIEST. My one question at this point is: Suppose the bill required fluoridation of local water supplies; would you also oppose it?

Dr. KNUTSON. Yes, I think we would. We have found over many years of experience that compulsion by law is not a successful measure insofar as bringing about effective utilization of a public health procedure is concerned. We are in favor of voluntary determination on the part of communities, either for or against.

Mr. PRIEST. One further question, Mr. Chairman, of Dr. Leone.

Doctor, you referred to an experiment with cattle in Tennessee, which, of course, is my home State. Do you know whether that experiment is in Giles County or in the vicinity of Giles County, Pulaski, Tenn.?

Dr. LEONE. I wouldn't know sir. I have it only by word of mouth from some of the people interested in this work with whom we exchange information.

Mr. PRIEST. I presume you know that throughout that particular area of the State there is a rather large quantity of fluoride in the water in natural solution. That, incidentally, is the area of the great Milky Way Farm, that has been at times rather nationally known. I am not acquainted with this particular experiment.

I wondered if you know it was in that particular area.

Dr. LEONE. I am not certain of the exact locality.

Mr. PRIEST. I shall obtain information from my own State health commissioner on that.

That is all, Mr. Chairman.

Mr. HALE. Mr. Crosser?

Mr. CROSSER. Doctor, what is your attitude in regard to chlorine?

Dr. KNUTSON. Certainly it has been adequately demonstrated, or fully demonstrated, that chlorine, in its use in the purification of water supplies, has been a very effective procedure in reducing the death from impure water, such as typhoid fever, the choleras, and so on. Its usefulness, I think, has been demonstrated beyond a doubt.

Mr. CROSSER. You make no comparison between these two.

Dr. KNUTSON. They are similar in some respects, dissimilar in others. They are both very effective health measures, we think.

Mr. CROSSER. You approve of both of them?

Dr. KNUTSON. Yes, sir.

Mr. CROSSER. We have had chlorine in the water for many, many years in Cleveland. I know that.

Mr. HESELTON. Dr. Knutson, I notice that neither you nor your associates seem to have filed in your statements any biography, any background material. It would seem to me that in terms of the record it might be well if you prepared a brief statement for submission.

Dr. KNUTSON. We shall be glad to submit such a statement.

(Information requested is as follows:)

BIOGRAPHY

JOHN WILLIAM KNUTSON

Graduated, University of Minnesota School of Dentistry, with doctor of dental surgery degree in 1931; dental intern and dental clinician, United States Public Health Service hospitals, 1931–35; child hygiene studies, dental, 1936–38; graduate studies in public health, Johns Hopkins School of Public Health, 1938–40, degrees of master of public health and doctor of public health; dental research and field studies in cooperation with Minnesota Department of Health and Dental Research Laboratory, University of Minnesota, 1940–44; Chief, Dental Health Section, States Relations Division, United States Public Health Service, 1944–48; Assistant Surgeon General, Chief Dental Officer, United States Public Health Service, 1952 to date; elected to Omicron Kappa Upsilon, honorary scholastic dental fraternity, June 1931; elected to Delta Omega, honorary scholastic public-health fraternity, May 1939; recipient of University of Minnesota Outstanding Achievement Medal Award, February 1951.

IZADORE ZIPKIN

Graduated, University of Rochester, major in chemistry, bachelor of arts degree, 1937; graduated, Pennsylvania State University, major in biochemistry, minor in organic chemistry, 1940; graduated, Pennsylvania State University, major in biochemistry, minor in organic chemistry, 1942; United States Army, first lieutenant to capitan, Sanitary Corps, 1942–46; biochemist at National Institute of Dental Research, United States Public Health Service, 1946 to present; elected to Phi Lambda Upsilon, national chemical honorary fraternity; elected to Sigma Xi, national research honorary fraternity.

NICHOLAS CHARLES LEONE

Graduated, University of California College of Pharmacy, graduate in pharmacy degree, 1929; graduate studies in nutrition and bacteriology, University of California, 1934–36; graduated, Harvard University School of Public Health, certificate in public health and master of public health degrees, 1941; graduated, Army Medical School of Tropical Medicine and Nutrition, 1943; graduated, Yale University School of Public Health, Army School Center, 1944; graduated, Duke University School of Medicine, bachelor of science in medicine and doctor of medicine degrees, 1950; practicing pharmacist, Albany Pharmacy, Albany, Calif. (while attending University of California, postgraduate), 1929–34; inspector, Bureau of Food and Drug Inspection, California State Department of Public Health, 1936–41; inspector, United States Food and Drug Administration, 1941–42; nutrition officer, Office of Surgeon General, United States Army, Walter Reed Hospital, 1942–43; nutrition officer, Fort McClellan, Ala., 1943–44; staff nutrition consultant, ETO, 1944–47; staff nutrition consultant, ETO and student, Duke Medical School, 1947–48; staff nutrition consultant, United States Army, 1948–50; Outpatient Clinic, United States Public Health Service, Internal Medicine, Washington, D. C., March 30, 1950, to July 1, 1950; Intern, United States Marine Hospital, Baltimore, Md., 1950–51; Outpatient Clinic, Internal Medicine, Washington, D. C., July 1, 1951, to August 10, 1951; National Microbiological Institute (Laboratory Biology Control), Hepatitis (human volunteer study), Bethesda, Md., 1951–53; Chief, Medical Investigations, National Institute of Dental Research, National Institutes of Health, United States Public Health Service, March 1, 1953, to present; Fellow, British Royal Society of Medicine, metabolic section; Bronze Star Medal—Supreme Headquarters, ETO, 1944 (for work in developing special nutrition survey methods for liberated and occupied countries of Europe and organizing and directing nutrition survey teams in Europe 1943–44); Ordre Sante Publique (French Minister of Health), French public-health medal for public-health liaison with the Allied Forces in France and for conducting nutrition survey on liberation of Paris and other areas of France, 1944–46.

Mr. HESELTON. I have heard, and I believe it is in the record of this hearing, that fluoride can be made from scrap aluminum; sodium fluoride.

Have you any comment on that?

Dr. KNUTSON. I should say or admit that I have heard that frequently myself, Mr. Heselton, but it is not. The majority of fluoride used in water fluoridation, the great majority of it, is a byproduct of the fertilizer industry, and it is purchased from the usual chemical companies; as was indicated this morning, the fluoride from the Grand Rapids water fluoridation project comes from a firm in Illinois. But there is a misunderstanding about the source of fluoride compounds. The great majority are byproducts of the fertilizer industry and have no connection whatever with the aluminum industry.

Mr. HESELTON. Is that a particular type of fertilizer, or generally any type of fertilizer?

Dr. KNUTSON. Fertilizer made from the phosphate rocks.

Mr. HESELTON. I have had a chance now to look at what are termed figure 1 and figure 2, in connection with food, and I was amazed at some of the data there.

In the first place, what do the little check marks opposite turnips, carrots, white and sweet potatoes, mean?

Dr. ZIPKIN. That is a mathematical symbol meaning "less than."

Mr. HESELTON. I am amazed to notice that milk chocolate ranges from 0.5 to 2 fluorine parts per million. Is that the edible chocolate, or is it the chocolate included in chocolate milks?

Dr. ZIPKIN. It is a milk chocolate, I presume a manufactured item.

Mr. HESELTON. That is, the chocolate bar?

Dr. ZIPKIN. I presume so, yes.

Mr. HESELTON. And then I notice that in connection with tea, it ranges from 30 to 60 fluorine parts per million, which, as I understand it, is a very heavy concentration of fluoride.

Dr. ZIPKIN. Yes. Thirty to sixty parts per million is an elevated figure.

Mr. HESELTON. What is the reason for the variation?

Dr. ZIPKIN. Well, there could be a number, I suppose, possibly where they were grown; possibly because the soil had a higher concentration of fluoride in one case than another. Perhaps it is present where the substrata of water which is rich in fluoride runs past volcanic regions. In Italy, around Vesuvius, for example, there is a high concentration. There are a number of contributing factors.

Dr. KNUTSON. I think it should be said that these are the concentrations in the tea leaves. As for a cup of tea, which is a brew of the tea leaves, if you drank a cup of tea you would get about two-tenths of a milligram.

Mr. HESELTON. Then I noticed that round steak is 1.3, and frankfurter is 1.7. Is there any particular reason for that, that you know of or advisable to determine?

Dr. ZIPKIN. Why round steak should differ from hamburg?

Mr. HESELTON. Yes.

Dr. ZIPKIN. I don't feel there is a real difference between 1.7 and 1.3. I don't know why there should be a differenre between the two. This represents the fluorine content as the food is consumed: I suppose it is available to the consumer. And it would not contribute a great amount of fluoride to the entire consumption, daily consumption. That is, theoretically, if you ate only this, you would have to eat two pounds of it at a sitting or something of that sort.

Mr. HESELTON. Then further, I notice that canned fish seems to have rather a marked concentration, ranging from 4.40 to 12.50. Is there anything about the process of canning that accounts for that?

Dr. ZIPKIN. Possibly, yes. These are probably done under sealed conditions. I am not familiar with the mechanical processes of canning, but there evidently is a concentration of the fluoride in the process of canning, I presume, since, as you mention, the fresh fish is less.

Mr. HESELTON. Dr. Leone, referring to the third page of your statement, I notice in the second finding you dismiss the higher incidence of cardiovascular disease in Cameron as "an observation unrelated to fluoride to ingestion." How did you determine that?

Dr. LEONE. Simply that Cameron is the control city, with just a trace of fluorine in the water.

We were studying it against Bartlett, which was the city of concern.

Mr. HESELTON. And then in the fifth finding, referring to the only difference in frequency rates as being in the counts of white blood cells, tending to be higher in Bartlett, you then said:

> This difference, when viewed in light of clinical circumstances, does not suggest an association with fluoride intake.

Standing alone, I didn't quite understand that. What were the clinical circumstances?

Dr. LEONE. The circumstances are that white cells normally vary in the blood stream. That is, your white cell count may vary from hour to hour, or if you have a cold your white blood count will be up. If, for instance, the survey was done in the summertime in one area, and perhaps a few days later, when we had a cold spell and everyone had the sniffles, it is very likely that the white count would be up. But it is something that varies.

Mr. HESELTON. Dr. Knutson, you were questioned on one phase of this matter before, and I would like to go a little further. I am interested in your statement that "there is no justification for any Federal intervention in local health matters." I certainly subscribe to that. I would like to know a little about the way in which the Public Health Service operates. Has the Public Health Service ever initiated an effort to place fluoride into a local water supply?

Dr. KNUTSON. I hesitate, because—initiated at our instance, no.

Mr. HESELTON. Did they write to them or send to them or in any fashion initiate it?

Dr. KNUTSON. No, sir, I can assure you that your State health officials are doing a good job of protecting their communities from our doing anything such as that, nor would we have any desire to do so. We enter a State only when we are invited or asked by the State officials to come to confer with them on technical matters or give them advice.

Mr. HESELTON. Then, taking a concrete case, if the State officials ask you to confer with them and furnish them with technical assistance or anything in the way of advice, you comply with that request, I take it?

Dr. KNUTSON. Yes, sir. To the best of our ability.

Mr. HESELTON. Do the local communities address those, either directly through you or through the State health authorities?

Dr. KNUTSON. Occasionally we do get the request from the local community, but in each of those cases we refer them to the State health department, so that we do not supply technical assistance without it being requested by and through the State health department.

Mr. HESELTON. So that the State health departments are in fact in control of the question of whether a community water supply shall be fluorinated, if that is the word: that is, subject to, of course, whatever they do in terms of their own communities?

Dr. KNUTSON. Yes, sir. I think that is true. I think their policy is like ours, though. They do not and would not wish to impose fluoridation on a community. They would like to have that determination made by the community. Nevertheless, virtually every State health department now recommends fluoridation as a standard procedure.

Mr. HESELTON. That is an expression that I wanted to ask about. You say "virtually." How many do?

Dr. KNUTSON. I believe the count is 46 or 47, plus the Territories. I can get that information for you, currently. And the one or two States that have not yet approved it are in the southwestern section, where virtually all communities have either the optimum or too much fluorine in the water supply.

Mr. HESELTON. Incidentally, I noticed in the map you furnished that only a few States apparently have no natural fluorine.

My own State of Massachusetts apparent has none, and the chairman's State of Maine. I believe in Vermont and Rhode Island, in New England, that is true, and perhaps one or two other States in the rest of the country. Is there any way to account for that?

Dr. KNUTSON. The presence of fluorine in a drinking water supply depends to a great extent or almost entirely on its source. If the water comes from ground waters, and that ground water flows over rocks that contain fluorides, then there will be fluoride in the water supply. If not, they will be fluoride-free. As you indicated and observed, the number of communities with natural fluoride in the water supply in the New England States is very small in number. Also, as you perhaps know, the highest dental caries rates in the country are observed up in the New England area.

Mr. HESELTON. You say they are the highest in the country up there?

Dr. KNUTSON. Yes, sir.

Mr. HESELTON. I didn't know that.

How many people are engaged in this activity in the Public Health Service?

Mr. HALE. You mean in fluoridation?

Mr. HESELTON. Experts are dealing with the problem of fluoridation—seems to be the word—of water supplies.

Dr. KNUTSON. I would say in answer to that question that no one individual is engaged full time in this matter or subject alone. They have a diversity of assignments. For instance, the two men with me are research people, who have done some research in the area of fluorides but are doing other research as well.

Now, they are asked for or receive letters asking them for advice on fluoridation and for their technical knowledge. One can say that they are assisting in promoting fluoridation, by supplying accurate

scientific evidence. But for the record, I can say that we have made an effort on the basis of other requests to determine how much funds we are expending in promoting fluoridation that can be, say, cut out from the time that individuals might spend on it, and our estimate runs somewhere between forty and fifty thousand dollars. Any of our consultants in the field, in the regional offices, the Surgeon General included, are asked from time to time for advice and suggestions about fluoridation. We receive letters asking for technical information, that may include not only the fluoridation problem but other problems. So I want to make the point clear that it is rather difficult to measure beyond that broad term.

Mr. HESELTON. That is your best estimate as to the current expenditures?

Dr. KNUTSON. That is correct.

Mr. HESELTON. And have they increased or decreased or stayed at the same level for a number of years?

Dr. KNUTSON. I believe that we could say that it has decreased during the past year. In other words, as the States increase their expertness in the field and their own technical knowledge, then the need for our assisting and guiding decreases.

Mr. HESELTON. Now let me ask you this: Do you have anything in the nature of what would be called a kit that could be sent, after clearance with the State health authorities, to local communities, containing descriptive literature, or articles, or directions, or anything of that nature?

Dr. KNUTSON. Yes, sir. We do have a collection of material that is gotten together specifically for the purpose of supplying individuals with information they request of us. But the dissemination of those kits of information is largely the responsibility of the State health departments. The American Dental Association has such a kit. We have, if I recall correctly, only 2 pieces of literature in that kit, which may amount to 10 or 15 different articles, or pieces of literature, defining the mechanical procedures involved in fluoridation, the benefits, and so on. We have, I believe I am correct in saying, only two of those pieces that were prepared by us.

Mr. HESELTON. Will you furnish the committee with a sample of that type of kit?

Dr. KNUTSON. Yes, sir; I shall be glad to.

Mr. HESELTON. Is there a representative of the American Dental Association still here?

Would you furnish the committee with a sample of the kit the American Dental Association has in connection with fluorine?

Dr. DOTY (J. Roy Doty, American Dental Association). I would be very happy to, sir. A year ago, we sent each Member of Congress a copy of that kit, and just recently we wrote the Members a letter asking of they would like another one, and we have received so far letters from Congressmen stating they had it and some letters stating they had misplaced them, and requested another.

We will send that out to you.

Mr. PELLY. Just to clear the record, I was under the impression that some witness testified that there were teams from the Public Health Service that go around to propagate propaganda. And you deny that, I take it?

Dr. KNUTSON. I am not aware of such teams being in existence, sir.

Mr. PELLY. I have seen a record somewhere of a meeting held in the Public Health Service, of notes taken down of discussions that were had in a so-called sales meeting, where so-called euphemistic terms were given out to be used in "selling the program," for example, "Never use the word 'artificial' fluoridation," that would indicate to me that certainly there was a sales meeting going on for the purpose of disseminating or spreading a program.

Do you know what I refer to?

Dr. KNUTSON. Yes, indeed, I do. Every 2 years there is a meeting held in Washington of the State dental directors. These are employees of the State health departments. They have asked for this meeting. They want this meeting so that they can get together and exchange information, exchange experiences, so that they may be, let's say, well informed on what is going on in a modern dental public health program. I can assure you that the discussions at those meetings are not in any way under our control. These individuals are quite able to take care of their own opinions and express their ideas very well, and there is, I would say, full freedom for each individual State dental director to express his own opinions and ideas on fluoridation or any other phase of a dental health program.

Mr. PELLY. When the issue of fluoridation comes up on the local level in some community, and the matter is to be referred to the people for a vote, then I take it that no team comes in to sell or propagandize the program.

Dr. KNUTSON. No, sir; not so far as the Federal Government is concerned.

Mr. HESELTON. There was a gentleman here either yesterday or the day before from Worcester, Mass. As I recall he had a pamphlet which he described as containing things to say and things not to say. I didn't see the pamphlet itself. I recall asking him if I was correct in my understanding that it was printed at the city hall. I think he said "yes," but he believed it came from some other source. Have you seen any such pamphlet?

Dr. KNUTSON. Of things to say and things not to say?

Mr. HESELTON. Yes; that is what I understood him to say.

Dr. KNUTSON. Yes. I have seen from time to time suggestions from those who are competent in the field of health education on, let's say, the best methods of presenting matters relating to health, not only in fluoridation but other matters.

Mr. HESELTON. I am confining myself to fluoridation.

Dr. KNUTSON. Yes. I have seen such presentations, which will indicate or suggest that one use certain methods of discussing the matter when discussing it on the local level.

Mr. HESELTON. Is that anything that has been prepared in the Department, or by the Department's recommendation?

Dr. KNUTSON. There has been no such leaflet prepared by the Federal Government, the Public Health Service, in particular.

Mr. HESELTON. Do you happen to know who did prepare it?

Dr. KNUTSON. I think reference was made yesterday to a pamphlet prepared by Dr. Phair, of the American Dental Association, in which he made some suggestions as to procedures which might be effectively employed in promoting fluoridation.

Mr. Pelly. I might say that I think it was last year that I sent over to the Department and got the minutes of a meeting which I believe had been held in the Department covering the subject of language that might best be utilized in discussing fluoridation on the local level, and I think possibly those same minutes of that meeting were utilized, on the local level, and might be the ones that were referred to.

Dr. Knutson. Any suggestions at that meeting relating to the subject were discussed by State dental directors who were participants in the meeting.

Mr. Pelly. I think that is the one that my colleague is probably referring to.

Dr. Knutson. Incidentally, that material is not for public distribution. It was a verbatim copy of minutes of the meeting, and the Public Health Service, the Surgeon General specifically, is not authorized to disseminate minutes of meetings unless so authorized by the participants. And we never were authorized by the State dental directors to disseminate those verbatim minutes. They were for their technical information only.

Mr. Warburton. Doctor, I am sorry I was not here earlier, because I wanted to hear all of your testimony and also the testimony of your two associates. The possibility may exist that you have answered these questions I am going to ask you. However, there are still a couple of points that are shadowed in my mind. The first one is this: As I recall the testimony from yesterday morning's meeting, it was indicated that there is an honest division of opinion within the medical and dental professions with regard to the efficacy of this treatment of water to attain the end for which it is designed. Is that correct? That is a recollection on my part.

Dr. Knutson. That is correct, but I think it should be qualified. The American Dental Association, for instance, is the official organization representing about, I think, close to 80,000 of the dentists in this country. The total is maybe 88,000. Let's say they represent about 80,000 of the dentists. They have endorsed water fluoridation. And the great majority of dentists in this country are of the opinion that this is the best, most remarkable preventive that has ever come on the horizon of preventive dentistry. That is the great majority. There are exceptions. So that is why I say this professional difference should be qualified.

That is also true within the medical profession. The American Public Health Association, which is largely medical, or at least its principal constituents are medical people, has endorsed this procedure. Virtually every national health organization concerned with health has endorsed this procedure; the National Research Council, the American Academy of Pediatrics, that is, physicians who treat children. Virtually all of them have endorsed it.

Now, there are exceptions. There are individual dentists who disagree. There are individual physicians who still are opposed to smallpox vaccination.

Mr. Warburton. Let me ask you this: What is the method, if you are familiar with it, by which the various dentists and medical men for whom these various associations speak receive their basic knowledge as to this particular operation, prior to the time that the particular

association speaks for them by resolution recommending adoption of the process?

Dr. KNUTSON. By and large their procedure is much the same as I outlined that we go through in the Public Health Service. When they have a matter of this import to consider, they appoint a committee, a study committee, and appointed to that committee are men who have demonstrated either their competence in the field of fluoride research or in other research, or their ability to evaluate research; so that they can evaluate this material—as I indicated, about 7,000 books, pamphlets, and articles—on fluorides and their effects on humans and on animals.

They appoint a committee, whose individuals have demonstrated their ability to evaluate this material, this scientific evidence, and to come forth with a solid recommendation. They must do that in order to protect the integrity of their organization.

Mr. WARBURTON. Now, in an area like this, where, as I understand this whole situation, we are attempting in effect to apply a general overall form of preventive medication, shouldn't there be almost complete unanimity as to the efficacy of that project, even as between individuals, trained individuals, who operate in the same fields of examination to determine the efficacy of it? In other words, how can two reputable practitioners or experimenters or whatever you call them, upon the same subject of the effect of fluoride ingestion into the human body, come up with completely diversified results or conclusions as to what that effect is?

Dr. KNUTSON. I would say on that point that there has been an amazing uniformity of findings among those who have worked for as long as 30 years in this field.

Mr. WARBURTON. Well, I find a discrepancy still exists in my mind, for example, as between some of the medical testimony on this particular point that has been given by the proponents of the process, as compared to some of the testimony that has been given by apparently equally qualified medical men who oppose it.

Apparently the particular witnesses on each side are equally well trained and equally reputable, and yet on the same subject they come out with widely diversified results. Now, I am not a doctor, as you know, or chemist, but it seems a rather unique situation to me.

Dr. KNUTSON. I think one might account for that on the basis that individual physicians, idividual dentists, vary remarkably in their ability to evaluate scientific information.

Mr. WARBURTON. Then in the case of a dentist who writes to me from the State of Delaware and asks me to support the public health position, having permitted, through the committee and convention process, the American Dental Association to speak for him, am I to assume that he knows or does not know what he is talking about from his own practical experience?

Dr. KNUTSON. I would not advise you to assume it, sir. I think there are ways of checking information. We are confronted with that same problem quite frequently. And there are ways of checking on, let's say, the validity of the claim; of holding back on a recommendation until it has been tested and reconfirmed by competent investigators. I illustrated the findings from Grand Rapids here. In independent studies from Newburgh, N. Y., studies which we had nothing

to do with, and Bradford, Ontario, and Evanston, Ill., each of them independent studies, the results are remarkably the same as ours.

Mr. WARBURTON. And you have faith obviously in the results of those studies?

Dr. KNUTSON. That is correct.

Mr. WARBURTON. Then let me ask you this: Why can't you convince these other people in your same profession?

Dr. KNUTSON. The history of the opposition to fluoridation is considerably like that noted in the opposition to chlorination of water supplies. I don't think there is any question but what perhaps 99.9 percent of the physicians in this country heartily endorse chlorination. It is no longer a controversial issue. But there are a few physicians yet who oppose chlorination. The same is true of vaccination. We never reach universal agreement. And we have not in fluoridation, and I don't expect 20 years from now we will have reached full agreement. Because individuals, again, vary in the amount of evidence they require before they adopt something.

Mr. WARBURTON. Let me say this to you, Doctor: I am not trying to be facetious, and neither am I trying to harass you in this line of questioning. However, there seems to me, from what I have been able to gather from the hearings, here, and from conversations in my own district, and from letters I have received, a relatively wide divergence of opinion as to the efficacy of this program. It seems to me that when you are in a situation where you are advocating what is, in effect, universal preventive medicine, which the individual himself cannot avoid, unless he wants to, for example, stop drinking from his usual water supply, you should have an area of almost complete unanimity, recognizing that you also have that element in any profession that won't accept what the great bulk believe is the correct conclusion. But as I understand it, medically this process which is being advocated is unique within the United States. I don't know that there is any other preventive medicine area where the whole scale of population have been, as individuals within the local scale, subjected to the treatment. And it seems to me that it is the establishment of a pretty wide precedent which should be fairly solidly based upon the total support, again barring the human element of dissidence, of the profession which are primarily concerned with it. Does that make sense, or does it not?

Dr. KNUTSON. Yes, indeed, it does. And, Mr. Congressman, I can assure you that in my opinion and in the opinions of those who have worked on this problem, we can say with conviction that no other public health procedure has been so thoroughly investigated prior to recommendation that it be employed as has water fluoridation. We do not view it as medication. It is more in the area of adding trace amounts of desirable elements; such as fortifying bread with vitamin D or fortifying milk, or iodized salt, or things of that nature.

Mr. WARBURTON. Isn't that basically the same thing as medication? In other words, aren't you adding something for human consumption whose end-result is to reduce susceptibility to some bodily ailment or physical defect?

Dr. KNUTSON. I believe the medical men inform me that medication means treating. We aren't treating dental caries here. We are preventing it.

Mr. WARBURTON. I appreciate that. Here what you are doing is attempting to reduce the body's susceptibility to caries of the teeth.

Dr. KNUTSON. That is right.

Mr. WARBURTON. Now, let me ask you this. Does that stand on the same basis, for example, from the medical standpoint, as giving injections of gamma globulin in order to increase the body's resistance to polio?

Dr. KNUTSON. Similar in some respects. Quite dissimilar, though, I should say, in others

Mr. WARBURTON. Why is it dissimilar?

Dr. KNUTSON. When you go into a grocery store and pick up a package of iodized salt, I don't think you feel you are medicating your family or those who use it.

Mr. WARBURTON. I think that is only because I personally have accepted it as a fact that it has a beneficial effect, and that is the only reason. We become accustomed to accepting it.

Dr. KNUTSON. You see, in essence, as I see this—and I recognize that everyone won't agree with me—we have demonstrated that fluoride in water supplies is distributed fortuitously by nature. It may be very low in some water supplies and very high in others.

What we are recommending here is that we not accept that, but make that water have the optimum amount of fluoride, not too much, not too little, but the optimum amount.

Mr. WARBURTON. But by the same token, in those areas where the water is not naturally in that condition, the Public Health Service advocates artificial addition.

Dr. KNUTSON. That is correct.

Mr. WARBURTON. And in those areas where the water naturally has more than what you consider the optimal condition, you would by some mechanical process subtract down to the optimum?

Dr. KNUTSON. That is correct.

Mr. WARBURTON. The reason for my concern is because I come from the second smallest State in the Union. I have received a request from our State dental society to support the Public Health Service's position with regard to the bill we are now considering. Yet, I have also received a substantial number of letters from individual dental practitioners asking me to oppose it. And I am in the unfortunate position of having to be able to find out enough about the subject to make a sensible answer to both sides of an issue like that. It is highly controversial for me, personally.

Let me ask you one other question on that particular score. Let us say that the position which the Public Health Service advocates is that the general public water supply be fluorinated, or fluoridated, or whatever the correct word is. Then, if for example, gamoglobulin or something else were specified as being just as efficacious in treating polio as you believe this is in preventing dental caries, would the Public Health Service advocate that the local communities by majority vote subject my child to ingestion of it just prior to the polio season?

Dr. KNUTSON. You mean on a compulsory basis?

Mr. WARBURTON. On a majority vote basis within the communities, which is my understanding of the way you think this should be done with regard to fluoridation.

Dr. KNUTSON. I think that is an individual community determination, and there are some States where they require, for example, smallpox vaccination before you can enter public schools.

Mr. WARBURTON. I appreciate that. That is ordinarly by act of the legislature.

Dr. KNUTSON. That the determination shall be on a community basis and not what Public Health Service wants.

Mr. WARBURTON. I agree with you on that score. My point is this: This appears to me, as well as I have been able to discover, the first or original situation where the Public Health Service, and therefore the Federal Government, in effect, have advocated this type of treatment, or medication, or whatever you want to call it, in order to prevent or to minimize a physical disability of some nature.

Can we take it one step further, and say that the Public Health Service would, for example, support the local communities' majority vote—and this is in the municipalities—to have all the children in the community injected with gamma globulin, in order to minimize the incidence of polio?

Dr. KNUTSON. First, I should like to say that it is not the first. The chlorination of water supplies has been endorsed by the Public Health Service, and we recommend that public water supplies be chlorinated. The fortification of bread has been recommended.

Mr. WARBURTON. That was knocked out by the Supreme Court, wasn't it, though, to a great extent?

No, I am sorry. I am thinking of something else.

Dr. KNUTSON. I think not.

You are in an area where it is rather difficult to cross this line of inoculation with a material that has not been tested anywhere near as fully as water fluoridation. The one it would be comparable to or most comparable to would be vaccination. And, as I indicated, they do have compulsion, community-wise, indirectly, by requiring in some States and some communities, that a child be vaccinated before entering school.

Mr. WARBURTON. That is rightt. We have it in Delaware, as a matter of fact.

Dr. KNUTSON. I am not, let's say, competent to speak in the area of the polio vaccine, but when it reaches the stage of having proved its value as fully as smallpox vaccination, I should not be surprised but what some communities will do their best to try to see that all children are protected.

Mr. WARBURTON. Let me ask you one further question along the line that Mr. Pelly and Mr. Heselton were talking just a moment or so ago.

I understand that the Public Health Service has a movie with regard to this process; is that correct?

Dr. KNUTSON. Yes, sir.

Mr. WARBURTON. What is in effect the nature or content of that movie? I have a special interest. It was made in the town of Newark, Del.

Dr. KNUTSON. That is correct.

The movie portrays the procedures through which a community might ordinarily go, or the steps it might take, in bringing about fluoridation in the community.

Mr. WARBURTON. What do you mean by bringing about fluoridation?

Dr. KNUTSON. This film is designed for the use of, let's say, local health councils or State health people, who are interested in bringing about fluoridation in a community which has a fluoride-deficient water supply.

And this presents facts relating to that fluoridation; what benefits they can expect; how readily and how easily they can control the adjustment of the water supply; what will be the cost of this procedure; and so on.

Mr. WARBURTON. In other words, it gives the selling arguments for fluoridation?

Dr. KNUTSON. That is correct.

Mr. WARBURTON. How does that get into the hands, for example, of town A in the State of Washington?

Dr. KNUTSON. He will get it from his State health department, not from the Public Health Service.

Mr. WARBURTON. How does the State health department get it?

Dr. KNUTSON. They get prints of the film from our regional offices. We have a limited number of them, and, as you might imagine, these prints are not in use full-time, so that with the limited number and through that distribution system, they are made available whenever they are requested.

Mr. WARBURTON. And they are requested. They have to be requested by the particular State board of health which wants to use them within the State?

Dr. KNUTSON. That is correct.

Mr. WARBURTON. No further questions.

Thank you, Doctor.

Mr. HALE. Thank you very much, gentlemen.

The committee appreciates your contribution, which has been important.

Maj. Robert W. Hobson.

How long will your statement take, Major Hobson?

STATEMENT OF MAJ. ROBERT W. HOBSON, DENTAL CORPS, RESEARCH AND DEVELOPMENT DIVISION, OFFICE OF THE SURGEON GENERAL

Major HOBSON. Two to three minutes, sir.

Mr. HALE. You are very welcome.

Major HOBSON. Mr. Chairman and members of the committee: I am Robert W. Hobson, major, Dental Corps, a member of the Research and Development Division of the office of The Surgeon General, Department of the Army. I represent the Department of Defense in expressing the opposition to the enactment of H. R. 2341.

The principle of fluoridation of certain portable water supplies as a means of preventing dental caries in children has been accepted by the American Medical Association, by the house of delegates of the American Dental Association, by the Food and Nutrition Board of the National Research Council, by the governing council of the American Public Health Association, by the United States Public Health Service, and by other Federal and State agencies interested in public health.

Irrespective of the views taken by the above agencies, it has been asserted that fluoridation is still in the experimental stage. The fact is that fluoridation of public water supplies cannot be considered "experimental" in the usual sense of the word or that the procedure has not been adequately studied. Various factors relating to fluoridation have been under study for at least 25 years.

Controlled studies of the addition of fluorides to water supplies began in 1945, and have shown almost the same pattern of protection against dental caries for children born and reared in these communities as is observed in areas where fluorides occur incidentally to the water supplies. Continued observations will establish the degree of effectiveness in older age groups who used fluoridated water during childhood.

It has further been asserted that artificial fluoridation may not produce the same results as do natural fluorides. Actually there is no such thing as "artificial fluoridation." Fluorides are always added to water, generally being picked up by water running through underground passages and crevices where the ground contains various fluoride compounds. In this process man has no control over the concentration. Studies show that the same results occur whether the fluoride is added in controlled amounts or whether added happenstance by nature, except that desired results are assured when the fluoride is added in controlled amounts.

As controlled studies on the subject of fluoridated water are continued, there is increasing evidence that older populations may also benefit from this practice. If this point is proved, then it will be desirable for the armed services to fluoridate water on posts where the water is deficient in this chemical.

In order to reaffirm the position of the agencies mentioned in the first paragraph of this statement and to determine the present position of the National Research Council, the Council was asked to restate its position on the principles of fluoridation of potable water supplies in September 1953. The following statement was received from the National Research Council:

> The Committee on Dentistry of the National Research Council believes that there is sufficient scientific evidence of the merits of fluoridation of public water supplies to justify its use on military posts whenever feasible, and especially where there is a child population in residence.

In view of the above positions taken by authoritative bodies, it is the opinion of the Department of Defense that under controlled conditions the fluoridation of water supplies is a public health asset and that legislation which would prohibit this practice would be detrimental to the public interest. Therefore, the Department of Defense opposes enactment of H. R. 2341.

Mr. HALE. Thank you, Major Hobson.

Are there any questions?

Mr. Pelly?

Mr. PELLY. Major, are any defense appropriations used for research in the field of fluoridation?

Major HOBSON. None in the field of fluoridation in this sense: There are some—and I don't know the extent—topical applications of fluoridation.

Mr. PELLY. What do you mean by that?

Major HOBSON. Topical application of fluoride is the application of fluoride to teeth by a dentist or a trained technician.

Mr. PELLY. As far as we know now, according to the testimony that has been given, fluoride does not benefit teeth beyond the age of 9 years; is that right?

Major HOBSON. It is my opinion, from what I have read, that there is increasing evidence that it might, and in that case we are interested.

Mr. PELLY. Up to now, how far?

Major HOBSON. We are not fluoridating water on any military post, camp, or station that I know of. We are, on some posts, camps, or stations, receiving fluoridated water that is purchased from local communities.

Mr. PELLY. In other words, you would be affected by this legislation?

Major HOBSON. Yes, sir.

Mr. PELLY. Thank you.

Mr. PRIEST. Just one further question, Mr. Chairman.

So far as you know, Major, is it contemplated that perhaps in the immediate or more remote future there might be fluoridation of water on military posts, if a supply is not available locally?

Major HOBSON. I would say I believe all services have had such requests, sir.

Mr. PRIEST. I believe the recommendation of the National Defense Council was that it should be done particularly where children were present on the post.

Major HOBSON. Yes, sir. That is correct.

Mr. PRIEST. That is all, Mr. Chairman.

Mr. HALE. Are there other questions?

Thank you very much, Major Hobson.

Major HOBSON. Thank you, sir.

Mr. HALE. Dr. John D. Porterfield, Association of State and Territorial Health Officers.

STATEMENT OF JOHN D. PORTERFIELD, M. D., VICE PRESIDENT, THE ASSOCIATION OF STATE AND TERRITORIAL HEALTH OFFICERS

Dr. PORTERFIELD. This opportunity to appear before you is much appreciated. I am a physician specializing in public health and have worked in that specialty for the past 15 years. Since 1947, I have been director of health for the State of Ohio. Presently, I am vice president of the Association of State and Territorial Health Officers. In that capacity I speak to you today as the designated representative of the 53 health authorities of the States and Territories of the United States. It is these officers who carry a major responsibility within the respective States for the maintenance of standards governing municipal water supplies. They are also responsible in great part for dental health programs with particular emphasis on preventive measures in this field.

The Association of State and Territorial Health Officers has taken the following actions, by vote of the full membership, approving and recommending the controlled addition of optimum amounts of fluorides to public water supplies for the partial prevention of dental caries:

Association of State and Territorial Health Officers, Annual Meeting, 1950:

Whereas careful scientific observations since 1929 indicate that tooth decay is not as prevalent in individuals using water supplies containing sodium fluoride; and

Whereas the artificial fluoridation of public water supplies was experimentally instituted and has been under continuous study since 1945; and

Whereas these studies have shown that there is no menace to the teeth of the persons using 1 part per million of sodium fluoride; and

Whereas State and Territorial dental health directors have endorsed in principle the fluoridation of public water supplies as a partial protection against dental caries: Therefore be it

Resolved, That the Association of State and Territorial Health Officers recommends, where the medical and dental professions concur and where communities can meet the standards of the State health authorities that all State health officials approve the artificial fluoridation of public water supplies for the partial control of dental caries.

And in its annual meeting of 1951, the following recommendation was made:

That the State and Territorial health departments be urged to conduct more intensive promotional and educational programs designed to bring the benefits of water fluoridation to all communities as soon as possible.

In its annual meeting in 1952, the following recommendation was made:

That the State and Territorial Health Officers Association, in view of the overwhelming evidence in favor of water fluoridation, reemphasize that the full benefits of this public health measure should be brought to all communities as rapidly as possible, and that association members aid communities in developing fluoridation programs by providing effective information, dental and engineering assistance.

And in its annual meeting in 1953:

It is recommended that the Department of Health, Education, and Welfare develop jointly with the State and Territorial health officers and their dental directors a plan to further expand, emphasize, and distribute information concerning the values of fluoridating water systems deficient in fluoride.

In addition to these formal actions taken by the association, virtually all individual State health authorities have established procedures for the approval of community fluoridation plans.

Rather than review the scientific evidence which formed the basis for these actions, I would like to describe the responsibility of a State health officer regarding the use of newly developed procedures for the prevention or control of disease.

A State health officer is charged by law with the protection of the public health and the prevention and control of disease. When any procedure is purported to provide health benefits he must carefully evaluate its effectiveness, safety, and practical worth.

This serious responsibility is one which leads to the development on the part of a State health officer of an extremely conservative attitude and a very critical point of view with respect to new advances in health practices.

It is within this framework of responsibility that the association examined the scientific evidence and, recognizing its responsibility, not only to safeguard the public health, but to promote procedures designed to improve the health status of our citizens, has seen fit to endorse and recommend controlled water fluoridation for the prevention of tooth decay. The association took due cognizance of the

claims that the procedures would be a hazard to health and found them without basis in scientific fact.

Therefore, the Association of State and Territorial Health Offices is firmly of the opinion that the passage of H. R. 2341 would not be in the public interest and, furthermore, its enactment would in fact be a contradiction of the overwhelming scientific evidence supporting water fluoridation as a safe and effective preventive of dental caries.

Mr. HALE. Are there any questions of Dr. Porterfield?

Mr. Beamer?

Mr. BEAMER. Dr. Porterfield, I have received letters from the Indiana Dental Society, which substantiates the statement you have made, and I take it all the States have organizations that belong to your association?

Dr. PORTERFIELD. No, sir, the Association of State and Territorial Health Officers is made up exclusively of the State health officer of each State and Territory.

In each of those States and Territories, there is a dental association. And much as Dr. Knutson described his use of advisory councils of experts, so, too, State health officers, in coming to these decisions of policy, confer with the dental health councils when it is a dental matter and with other people who have experience or ability in the field in question.

Mr. BEAMER. The reason I make this statement is because I have received no letters from the Indiana State health officer, although I have received numerous letters from the dental societies and from individual dentists. I am wondering whether or not the State health officer confers with the various dental societies.

Dr. PORTERFIELD. It is my understanding that he does, sir. I am personally familiar, to some degree, with both the State health officer and with his methods of operation in that State, and that is his practice. And I know personally that he has endorsed, as the chief health officer of Indiana, the fluoridation program.

Mr. HESELTON. Doctor, I notice that beginning in 1951, and following it up in 1952 and 1953, at the annual meeting, the association voted to urge the State and Territorial health departments to conduct a more intensive promotional and educational program. In effect, that is the same sort of a vote as taken in 1952 and 1953.

Will you describe briefly the type of program that you were urging? Is there any literature that was provided for distribution? If so, of what type was it, and how widely disseminated?

Dr. PORTERFIELD. The association, as such, sir, does not have funds to carry out operations of any nature as an association. It confines itself pretty much to its annual meeting and conferences of that type. However, each of the individual State health officers has, in keeping with his resources and interest, developed things. A number of the States have developed educational or informational material on this question of fluoridation.

They have also availed themselves of the resources both of the Public health service and of the American Dental Association. Several of them, I know, individually have collected a kit of their own by personal solicitation from the various authors who have published in this field, both pro and con, in order to determine for themselves what their policy should be, and then to promote that policy, that recommendation, in the form of health education within their State.

Mr. BEAMER. What about the situation in your own State of Ohio? Do you have such a kit available?

Dr. PORTERFIELD. Yes, sir. I don't have it available with me, but such could be sent you.

Some of those would be duplicates of items you could receive from other associations, but it is our particular collection in Ohio that we use when a community expresses interest in considering this questior

Mr. BEAMER. If you will do that, I think it will be very helpful.

Now, in addition to that, do you know whether or not the State authorities send any agents or representatives around to the communities, either to explain what the State official position is or to attempt to stir up interest in introducing fluoridation of the local public water supply?

Dr. PORTERFIELD. Yes, sir. That would be in keeping with our general operation. Most State health departments devote a considerable amount of their activity to educational activity; and in that connection both dentists and health educators from the various departments would travel in their State to communities, usually but not always on specific invitation of the local dental societies or the local medical society or the local board of health or citizens health council.

If I may etend my remarks in xthat connection, however, this question and would like to have information, when such requests come in from the community, the State health department sends people to provide that information. There is no gainsaying the fact that when questions are not raised locally, the health educators and the dentists and such people from the State health department may, in their visits to local health departments, in discussing their overall programs, suggest to them that one item in their program which they have not considered is fluoridation.

If I may extend my remarks in that connection, however, this matter of promotion of fluoridation is within controlled limits. The State health department in Ohio and I think, in most other States, reserves the right to disapprove a community's desire to fluoridate water if the engineers of the State health department have determined that its waterworks system and the personnel operating such are not competent to provide a control program.

Mr. BEAMER. Has that right ever been exercised, to your knowledge, in Ohio?

Dr. PORTERFIELD. Yes, sir; not formally by the State health department council action, but we have advised one or two small communities that until they develop a proper water supply system and a properly trained operator, we can't recommend to them that they consider the question.

It has never gone further than that.

Mr. BEAMER. Thank you, Doctor. That is all.

Mr. HALE. Mr. Pelly?

Mr. PELLY. Doctor, I would just like to ask you if in the State of Ohio you have had local votes in communities on whether they should or should not put in fluoridation?

Dr. PORTERFIELD. Yes, sir. There has been one that is well known, in the city of Cincinnati.

Mr. PELLY. That is the only vote you know of?

Dr. PORTERFIELD. That is the only popular referendum of which I know, yes.

Mr. PELLY. I asked Dr. Knutson before you came on the stand as to whether or not teams of Federal workers had gone around to promote fluoridation, and you may have heard a gasp from certain individuals, who I think were proponents of the bill, indicating that there was some doubt in their minds as to whether or not the public health service had done it or not. Do you know in the State of Ohio whether or not any State Public Health Service officials have gone around to promote fluoridation?

Dr. PORTERFIELD. To the best of my knowledge, sir, Public Health Service officials have not, of their own volition, come into the State of Ohio and taken any community action. It depends, I think, a little bit on the context of the question asked. When the city of Cincinnati was considering the question of fluoridation, the city health officer, the health council of that city, the health federation, so-called, and certain other groups down there who were interested, sought the help and advise of the State health department.

Our dental health chief and others, including myself, visited Cincinnati, indulged in public forums in which both sides of the issue were debated, both on television and in public meetings; and during that time, which extended over several months, it may well be, although I don't know this as a specific fact, that we had called in an employee of the Public Health Service from the regional office to travel with us or to advise us on certain material that was not immediately available at first hand to us. So it is possible; but not directly from the Federal Government to the community; not in Ohio.

Mr. PELLY. I can understand how a misunderstanding might have arisen, and that possibly some local health authorities or State health authorities had called in regional Public Health Service members to travel to some community with them.

Dr. PORTERFIELD. That is right, sir.

Mr. PELLY. That is all. Thank you, Mr. Chairman.

Mr. HALE. Thank you very much, Dr. Porterfield.

The last witness will be Dr. Harry Jordan, secretary of the American Water Works Association.

STATEMENT OF HARRY E. JORDAN, SECRETARY AND CHIEF EXECUTIVE OFFICER OF THE AMERICAN WATER WORKS ASSOCIATION, BY DAVID AULD, DIRECTOR, AMERICAN WATER WORKS ASSOCIATION

Mr. AULD. Mr. Chairman, Dr. Harry Jordan was unavoidably prevented from coming to this hearing.

He asked me to present his paper to you.

I am David Auld, a director of the American Water Works Association. [Reading:]

My name is Harry E. Jordan. I have the honor to present to your committee comments in opposition to the enactment of H. R. 2341 (Wier), to protect the public health from the dangers of fluoridation of water.

I have for more than 50 years been concerned with the production and distribution of safe water supply. I am a graduate of Franklin College, holding degrees of bachelor of science and doctor of science in chemistry. I am a life member of the American Society of Civil Engineers, the American Public Health Association; and an honorary member of the American Water Works Association and the New England Water Works Association. I have been since 1936 the secretary and chief executive officer of the American Water Works Association.

The association, which is an organization of waterworks executives and staff numbering 9,890 persons on May 1, 1954, adopted in June 1949 a statement of policy concerning fluoridation of public water supplies which reads as follows:

"In communities where a strong public demand has developed and the procedure has the full approval of the local medical and dental societies, the local and State health authorities and others responsible for the communal health, water departments or companies may properly participate in a program of fluoridation of public water supplies."

It will be noted that the association expresses no professional opinion concerning the merits of fluoridation—but states that it relies upon the opinion of trained physicians and dentists to advise local administrative authorities whenever it appears that fluoridation of a particular water supply is needed.

I wish to point out with full emphasis that the addition of fluorides to water in a treatment plant is an operation involving no unusual procedures or equipment. Fluorides are only one of a series of a large group of chemicals widely used in water treatment; carefully controlled by the operators in charge of the system; and no more likely to be fed in excess than any of the other materials. The apprehension expressed by some opponents of fluoridation that careless operation might poison a community is ridiculous. Such things simply do not happen.

There also appears from time to time the statement that the addition of fluorides to the public water supply is wasteful—since the proportion of the total water produced in a city used for drinking is low. It is true that people drink only about one half gallon per day out of the average of 140 gallons produced per person per day. The same proportions affects the use of any treatment material intended to make water safe for drinking. Fluoride-bearing minerals are in ample supply to supply the needs for water treatment.

But it is just as true that it cannot be considered wasteful when we realize how great has been the value of modern water quality. In 1900 more than 50 persons per 100,000 living died each year from typhoid fever in the United States. Today thanks to efficient water treatment and the general increase of sanitary protection of the people, less than 1 person per 200,000 living dies of typhoid.

A reduction of such magnitude in waterborne disease should convince any thinking person that the care taken to make all the water safe to drink is worth many times over what it costs.

I shall leave to representatives of the dental and medical professions the opportunity to present their opinions concerning the value of fluoride-bearing water in prevention of, or reduction of dental caries.

You should, however, be advised that over 1,100 communities having a population totaling over 3,500,000 persons have for many years used water supplies containing fluorides naturally present in accepted amounts. As one trained in the science of chemistry, I may state there is no significant difference in the character of fluoride as it naturally occurs in water and fluoride as it may be added to water in amount recommended by the dental profession. Therefore, the more than 17 million persons in over 900 communities, who have been furnished in the years since 1945, water to which fluoride has been added in controlled amounts are under no exposure to fluoride different from the 3,500,000 who have for years used natural fluoride-bearing water.

However, speaking for the public water-supply industry which today serves 110 million persons in the United States, I wish to state my opinion that the Congress cannot with propriety legislate what material may not be used in the treatment of a public water supply. Similarly, I doubt that it could with reason legislate what is to be used in water treatment.

The Federal Government today includes a large group of agencies upon which Congress has conferred the duty of acting in areas assigned to each and controlling procedures and practices, in their respective fields. The Congress has established among others, the Department of Health, Education, and Welfare and has granted it powers, which among other things, cover dental health and quality of water used in interstate commerce. Consistent with the authority given by the Congress, staff members of the Health, Education, and Welfare Department have, with full professional competence, investigated fluoridation and have announced their opinion that controlled addition of fluorides to public water supplies is proper and highly desirable.

Unless the Congress has available to it a mass of professional evidence which shows that the Government's own agents are professionally incompetent, it is not

proper for legislation to run counter to the opinion of the Government's own experts.

I wish, however, to object on broader grounds to a legislative enactment which will forbid the use of a water-treatment material recommended by competent professional authority. The water works industry now uses widely two chemicals in purification to which objections were once made by persons presumably well informed.

The Army engineers, who about 1900 recommended purification of the Washington, D. C., water supply by means of coagulation with alum followed by filtration, was opposed in a hearing before a Senate committee by a group representing the District medical society. The water treatment plant, was, therefore, built so as to operate without coagulant. But in less than 5 years after the plant was built it was found necessary to use alum. It had been learned that the system could not function satisfactorily without alum. Its use continues to this day—with results satisfactory to the operators, to the medical profession, and to the public. Today there are more than 2,000 cities in the United States using water treated with alum or its functional equivalent.

In 1910 the use of chlorine as an agent to destroy bacteria in water was being widely considered. Dr. Harvey W. Wiley, then Chief Chemist of the Department of Agriculture, when asked a question about the propriety of using chlorin, stated (without studying the question carefully) that "chlorine in water is as much an adulterant, as formaldehyde in milk." Fortunately, for the public good, Dr. Wiley's comment gained little attention. The use of chlorine spread and the evidences of its great benefit grew. Today more than 3,500 communities in the United States drink safer water because chlorine is used to remove the last bacteria which may have polluted it.

If your committee had been in existence in 1902 and the opposition to alum as a coagulant had led you to recommend that alum or its equivalent not be used in water purification, you would have been in error—as history now shows.

If your committee had been faced with the opposition to chlorination in 1910, you might have been led to recommend legislation forbidding the use of chlorine in water treatment. You would have been in error—as history now demonstrates.

In the last 50 years, improvements in the quality of public supply—improvements made possible because valid progress was not hampered by adverse legislation—have saved the lives of at least 5 million persons who would have died of waterborne diseases if the water-supply industry had not kept in step with the advances in scientific knowledge.

I therefore appeal to you—as reasonable and intelligent public servants—not to recommend legislation forbidding the fluoridation of public water supply. Let the decision to fluoridate or not to fluoridate be left to the State and local authorities and let them base their action upon the advice of the medical and dental professions.

Mr. BEAMER. I have no questions to ask, but only a comment to make. Isn't it a fact that not too many years ago some people thought it was dangerous to bring water through copper pipes?

Mr. AULD. I think that did come under study, yes; lead, too.

Mr. BEAMER. Once upon a time isn't it true that the tomato was considered a poisonous fruit?

Mr. AULD. Right.

Mr. BEAMER. I had the opportunity to have passed around some good Indiana tomato juice to my colleagues recently, and they enjoyed it. And I am trying to point out what I think you are trying to point out, that as we advance in science and the development of products, something that may have seemed injurious at one time has been proved not to be injurious but rather helpful.

Mr. AULD. Time has seen that repeatedly in many fields. And it would seem unfortunate to stop it by legislation at this time with respect to fluoridation.

Mr. HALE. Thank you.

Mr. AULD. Thank you, Mr. Chairman.

Mr. HALE. This will conclude the hearings on H. R. 2341.

When the committee adjourns, it will adjourn to meet tomorrow morning at 10 o'clock.

At this point we will insert statements of opponents of the bill which have been submitted for the record.

I have a letter from the Honorable John W. McCormack enclosing a telegram from a number of doctors;

A letter from Dr. Clifton O. Dummett, Chief, Dental Service, Veterans' Administration, Tuskegee, Ala., enclosing some information;

A letter from Dr. Francis Lehr of the New Jersey State Dental Society;

A letter from Dr. Earl G. Ludlam, New Jersey State Department of Health;

A letter from Dr. Thomas Parran, former Surgeon General of the United States;

A letter from Francis J. Garvey of the American Dental Association;

A letter from the Plainfield Dental Society, Plainfield, N. J.;

A letter from Dr. George F. Lull, secretary and general manager, American Medical Association;

A letter from Katherine Ellickson, CIO;

A letter from A. P. Black of the University of Florida;

A letter from Dr. Kenneth F. Maxcy of Johns Hopkins University;

A letter from Prof. Harold C. Hodge, of the University of Rochester.

(The statements referred to are as follows:)

CONGRESS OF THE UNITED STATES
HOUSE OF REPRESENTATIVES,
OFFICE OF THE DEMOCRATIC WHIP,
Washington, D. C., May 25, 1954.

Hon. CHARLES B. WOLVERTON,
House Office Building, Washington, D. C.

Dear Chairman WOLVERTON: I am enclosing a telegram received from Dr. James M. Faulkner and a number of other doctors in opposition to H. R. 2341, which I am respectfully sending to you without comment on my part for the information of yourself and the other members of your committee.

With kind regards, I am

Sincerely yours,

JOHN W. MCCORMACK.

BOSTON, MASS., *May 18, 1954.*

Representative JOHN W. MCCORMACK,
House of Representatives, Washington, D. C.

We the undersigned Massachusetts public officials, research workers, teachers and Representatives of voluntary organized medicine and dentistry urge the defeat of H. R. 2341. We believe that fluoridation of communal water supplies by one part per million a safe and effective measure to combat dental caries and that the passage of H. R. 2341 would be a serious step backward in this important phase of the public health.

Dr. James M. Faulkner, Dean, Boston University School of Medicine; Dr. Roy A. Greet, Dean, Harvard School Dental Medicine; Dr. James F. Simmons, Dean, Harvard School of Public Health; Dr. Cyril D. Marshall-Day, Dean, Tufts College Dental School; Dr. Joseph M. Hayman, Jr., Dean, Tufts College Medical School; Dr. Frederick Stare, Professor of Nutrition, Harvard School of Public Health; Dr. James H. Shaw, Assistant Professor of Dental Medicine, Harvard School of Dental Medicine; Dr. Reidar F. Sognnaes, Professor of Oral Pathology and Assisting Dean of Harvard School of Dental Medicine; Dr. James M. Dunning,

Chairman, Health Division of Cambridge Community Services; Dr. Hugh Leavell, President, American Public Health Association; Curtis M. Hilliard, Supervisor of Department of Public Health, Wellesley, Needham, and Weston; Dr. John F. Conlin, Director, Public Information and Education, Massachusetts Medical Society; Dr. Edward R. Loftus, Chairman, Special Fluoridation Committee, Massachusetts Dental Society; Dr. Edwin T. Holmes, Chairman, Council on Dental Health, Massachusetts Dental Society; Dr. George J. Fink, President, Massachusetts Dental Society; and Dr. Harold E. Tingley, Secretary, Massachusetts Dental Society.

VETERANS' ADMINISTRATION,
DEPARTMENT OF MEDICINE AND SURGERY,
Tuskegee, Ala., May 17, 1954.

Representative CHARLES A. WOLVERTON,
Chairman, Interstate and Foreign Commerce Committee,
House of Representatives, Washington, D. C.

DEAR REPRESENTATIVE WOLVERTON: The purpose of this short note is to express my opposition to the Wier bill, H. R. 2341 which seeks to prohibit fluoridation of public water supplies throughout the United States.

The evidence in favor of fluoridation is overwhelming and it seems so unreal that there should be as much emotional opposition to a measure which has so much good to support it.

I am enclosing for your information some articles on the proceedings of a conference which was held here last year which surveyed most of the material in the field. I am calling your attention especially to pages 69 to 103. I feel that you would be very much interested in this material. My hope is that this bill will be defeated.

Very sincerely yours,

CLIFTON O. DUMMETT, D. D. S.,
Chief, Dental Service.

THE DENTAL CARIES PROBLEM AND ITS IMPACT ON EVERYDAY LIFE

(Carl L. Sebelius)

There exists today among our people a very great need for more adequate dental service. This need has become recognized throughout the country since greater emphasis is now being placed on the importance of early and regular visits to the dentist, as well as certain preventive dental procedures which, if applied, are known to reduce the incidence of dental caries. The two procedures which have been shown to be the most effective are the topical application of fluorides to the teeth and the controlled fluoridation of the municipal water supplies.

In order to give you a picture of the dental caries problem among children, I wish to present certain facts which have been taken from the dental examinations made by members of the Dental Service of the Tennessee Department of Public Health. I doubt very much if the figures would be much better in other communities of the South. For instance, during a 2-year period, dental personnel of the Dental Hygiene Service examined over 12,000 children, 6 to 8 years of age, in random schools in over 40 counties of Tennessee. These examinations showed over 6 dental defects per child and over 89 percent of the children in need of some type of dental service. Some may say, why so much fuss about the dental needs of children? I should like to emphasize that these children were found to have an average of 18 cavities for every filling and it is known that if bite-wing X-ray examinations had been made, the number of cavities would have been much greater.

Today, when a dental program is established in a community it is common for the dentist to limit his services almost entirely to the extraction of hopelessly decayed teeth. Certainly such a program is not ideal in any respect.

This tremendous need for more adequate dental care for the children may be due in part to the apathetic attitude many people have toward dental disease. A great group of our population attaches relatively little importance to dental disease found in our child population. Many consider it commonplace, even

trivial, and an unavoidable nuisance, an attitude somewhat similar to our feelings in regard to the common cold. This commonplace acceptance constitutes a real danger and an obstacle to progress in dental public health. There are others who say that the problem is too great to attack and that dental disease lacks in public appeal.

Another example of why there is such a dental health problem, especially among children, was recently reinforced when in Oslo, Norway, I had the privilege of seeing that dental program in operation and examining the teeth of about 1,000 children who were 9, 11 and 13 years of age. In Oslo, the city spends approximately 1 percent of its tax money on its dental program for children. There are no fluorides in the water, and in order to attempt to control dental decay among the children, the city has established over 50 dental clinics with 20 chairs used for children under 7 years of age. There are 100 full-time dentists working in Oslo's public service program for children. Even though the city has a population of about one-half million people, the dentists are finding it almost impossible to give complete dental care to the schoolchildren's permanent teeth. It was interesting, however, to observe that practically no permanent teeth were missing and that in Oslo there are 400 dentists in private practice working primarily for adults.

I think you would be interested in certain restrictive regulations which have been set up so that the dentists can keep up with the dental needs of these children:

1. Preschool children must enter the service at 3 years of age. If a request for admittance to the service is made after that age, the child must have already received complete dental care, usually from a private dentist.

2. A child entering school at the age of 7 receives complete care of the deciduous teeth only if he has previously had these teeth cared for.

3. All young people 14 to 18 years of age must have received dental service during their school period to be eligible for dental service. It also must be realized that most of the school dental programs in Scandinavia have been in operation for 30 to 50 years and that it is the exception where a child in school has never visited a dentist.

If these children had always received fluoridated water, it seems most reasonable to think that probably 35 or 40 dentists might do the work now requiring 100 dentists and 160 assistants.

The dental caries problem does have an impact on everyday living. On page 16 of the March 1952 issue of Today's Health, are the following 3 paragraphs on preventing tooth decay:

"Badly needed is more research to find ways of preventing the enormous waste of human teeth," Col. John R. Wood, chairman of the Medical Research and Development Board, Office of the Army Surgeon General, told the American Pharmaceutical Manufacturers' Association.

"More than 40 percent of men entering the services in World War II needed immediate treatment to save their teeth about to be lost, and one-third of them needed treatment for toothaches. Five percent needed new teeth to have enough to chew with. Even today, our troops are losing collectively well over a million teeth per year. The cost of this care, at the most conservative civilian rate, exceeds $80 million a year. Yet, only about a million dollars a year is being spent on dental research, only part of that on methods of halting this waste."

Recently in the Journal of the American Dental Association there appeared an article which stated that in 1950 approximately $1 billion was spent in this country for dental service. When the people of our country spend $1 billion or more per year for dental service, surely dental research is deserving of more than $1 for every thousand dollars spent: $110 for every thousand was being spent for medical research. I feel that it is time that more support and emphasis be placed on the creation of a higher level of dental health in this country. As a member of the National Advisory Dental Research Council, I know that many acceptable dental research projects cannot be started because of a lack of funds.

We could talk for a long time as to why a dental health problem exists, the psychological, economical, educational, and professional problems involved, yet dollar per dollar dental research in the field of dental caries control has paid tremendous dividends. The present trend seems to be directed toward the restricted use of refined carbohydrates, the use of topically applied fluorides, the fluoridation of public water supplies, and the proper use of the toothbrush especially following the consumption of fermentable sugars. There certainly is a

trend toward more research in the field of dentifrices which may effectively assist in the control of dental caries.

In this country there has developed a trend to discourage the sale of sugars in the schools. In the fall of 1950, the council on dental health of the American Dental Association adopted a resolution which requested that the sale of candy, soft drinks, and other confections be discouraged in our schools. In the May 1950 issue of the Journal of the American Medical Association, the council on food and nutrition gave its reasons why carbonated beverages should not be sold on school premises. In August 1951 the National Congress of Parents and Teachers went on record as being in favor of banning the sale of candies and carbonated beverages in the schools of our Nation.

The use of fluorides, especially the fluoridation of public water supplies, is rapidly developing into a comprehensive nationwide movement. The division of Dental Public Health of the United States Public Health Service considers the promotion of controlled fluoridation its priority 1 project. This is also true of the divisions of dental health of State health departments of this country, as well as dental society groups.

The committees of workshop, public relations, and dental health of the Tennessee State Dental Association recently conducted a workshop which had as its theme, "Help Yourself to Water Fluoridation." The meeting was attended by over 100 dentists, health workers, educators, invited guests and representatives of lay and civic groups. The workshop was planned with the same objective in mind as I am sure Dr. Dummett and his committee had in arranging this symposium; namely, that all individuals interested in dental health might think together, plan together and work together toward a goal of better dental and general health.

The controlled fluoridation of water is a start in the right direction. There is evidence as to the benefits to be obtained and we need to promote the procedure with the thorough and firm knowledge that, if the people of a town want fluoridation, they have it—but they must want it and they must say so. Since the city official is very sensitive to community spirit, it must always be realized that 1 phone call against the practice of fluoridation will cancel 20 phone calls asking for it. Those of us in the field of dental public health feel that everyone should have the facts and if they have the facts they will be for water fluoridation. We think that fluoridation will rank with the major public-health movements of all time, and we hope that everyone interested in this most worthwhile public health program will inform others and actually start what might be called a chain reaction so that, within a relatively short period of time, fluoridated water may be made available in every community where there is an approved water supply.

Water Fluoridation

(Sidney B. Finn)

We have heard from Dr. Sebelius about the magnitude of the dental caries problem. As he has suggested, if there is to be a solution to this problem, it will come through prevention, and if prevention is to make progress in eliminating the vast reservoir of untreated cavities for future generations, preventive means must be applied to large segments of the population. This would be most feasible as a public health measure on a population basis. I can think of no better way of reaching the entire population equitably than through a community water supply. Water is the only commodity consumed consistently by all persons. It is highly advisable that any agent or chemical used for the purpose of reducing dental decay for the entire population should have five important requisites: (1) It must be of unquestionable value, (2) It must be relatively inexpensive, (3) it must be safe to use, (4) it must be easily utilized on a population basis, and (5) it must require little or no effort on the part of the individual benefited.

It cannot be denied that there is more than one way of reducing dental caries. Carbohydrate restriction, topical fluoride applications, rigid adherence to the rules of oral hygiene, all are capable of doing good. However, each falls short of what is desired in one or more ways. Water fluoridation or the treatment of a communal water supply with 1 part per million of fluorine, in the form of a fluoride, meets the requirements of a preventive agent more adequately than

any ever suggested. So much so, in fact, that I can have no hesitation in strongly recommending this form of dental decay prevention for every community with a supervised communal water supply. Nowhere in medicine or dentistry has a preventive agent had such a vast amount of irrefutable evidence to recommend it, and I may add, so little reliable, confirmed evidence against it. If one studies the bibliography on water fluoridation, one is immediately impressed with the vast amount of epidemiological and experimental evidence that has gone into the establishment of the fluorine-caries hypothesis. As early as 1867, Magitot suggested that fluorine was associated in some way with the integrity of the tooth.

In 1892, Sir Crichton Browne, writing in the British Medical Journal, Lancet, indicated that teeth contained more fluorine than any tissue in the body, and that fluorine was there for a reason and that the reason was to prevent dental decay. He suggested that foods rich in this element should be incorporated into the diet of children for that purpose.

From 1908 to 1916, Doctors Black and McKay thoroughly studied a pathological condition of the teeth endemic among those reared in certain limited areas of Southwestern United States. Among these individuals the teeth were poorly formed, stained, and pitted. To this disfiguring disease, they applied the term "mottled enamel." They observed that mottled enamel could be acquired only if persons resided in these areas during the period of tooth formation, and once acquired it remained for life. They further observed that people moving into these areas after their teeth were formed did not acquire this disease. They also established that the cause of mottled enamel was in some way waterborne.

In 1931, through chemical analyses of water, and through animal experiments, it was discovered that mottled enamel was caused by excessive amounts of fluorine in the drinking water supplies. In 1938, Dean and his associates reexamined these endemic areas in Southwestern United States and other areas in the Midwest where fluorosis was endemic. They determined that the severity of the fluorosis was directly proportional to the fluorine content of the water consumed. Esthetically significant, mottling occurred only in individuals consuming over 1.5 parts per million of fluorine. Their epidemiological studies further indicated that those individuals consuming water containing 1 part per million of fluorine or over had approximately 60 percent less dental caries than was found in neighboring communities where fluorine-free water was consumed. They also made the important deduction that the reduction in dental caries was not inversely proportional to the fluorine content of the water supply. As a matter of fact, there was just as great a reduction when the water contained 1 part per million of fluorine as when it contained 14 parts per million, and one did not get disfiguring fluorosis. These observations by Dean and others from different areas of the world, received additional confirmation from animal experiments and from chemical analyses of the fluorine content of sound and carious teeth. Recent studies indicate that this resistance to caries, once acquired, persists throughout lifetime. There are actually 8 million persons in the United States consuming water containing 1 part per million of fluorine or over, naturally in the water supply.

The question soon presented itself as to why couldn't fluorine be added artificially to the water supplies in areas where fluorides were deficient. In 1939, Cox, speaking before the Pennsylvania Water Works Association, first suggested artificial fluoridation. By 1945, a number of communities in the United States were fluoridating their water on a demonstration basis, for although naturally fluoridated waters reduced the incidence of dental caries, it was still to be proved that artificially fluoridated water would do the same. In 1944, the New York State Department of Health initiated the Newburgh-Kingston study, with dental examinations of all the school children in Newburgh. It is not the intent of this paper to discuss the results of all studies published to date. This will be done by the next speaker. I would like to confine my remarks to the Newburgh study, with which I was associated since its inception.

Newburgh, N. Y. is situated on the Hudson River, 60 miles above New York City. Its water supply was fluoridated with 1.2 parts per million of fluorine as sodium fluoride, May 2, 1945. Kingston, a similar sized city, situated 30 miles above Newburgh continued to drink fluorine-free water and served as the control. Yearly dental examinations were made with mouth mirror and explorer under good light on the entire school population of over 3,000 children in each city. At the end of a 4-year period of fluoridation all 7-, 9-, and

11-year-old children were X-rayed to determine whether X-rays would confirm our clinical findings. The X-rays did confirm our clinical findings.

In the permanent teeth of the 6- to 12-year-old children, dental caries experience was reduced 32.5 percent. Among the 6-year-olds, the reduction amounted to 77.6 percent. Since about 70 percent of all tooth decay developing in the permanent teeth of children occurs in the 6-year molar, it was of interest to see if there was a reduction in dental caries there. In the 6- to 9-year-age group, 59 percent of the first permanent molars were caries-free before the study, while 77 percent were caries-free after 4 years of fluoridation. In the deciduous teeth of children 5 years of age 27.2 percent were carious prior to fluoridation. Only 10.9 percent were carious after 4 years of fluoridation. Caries activity after 4 years as indicated by salivary bacterial counts indicated less activity in these mouths.

Another part of the Newburgh-Kingston study deals with medical aspects. In the literature are many reports about the harmful effects of fluorides. Unfortunately these reports make no distinction between toxic and nontoxic doses. Those who have actually had the greatest experience with fluorides believe that in quantities of 1 part per million fluorine no deleterious effects are observed. To determine the truth about this, a complete medical study on over 600 children in Newburgh and 600 in Kingston has been undertaken on children from birth to 14 years of age. These children receive complete physical examinations which consist of height and weight measurements, examination of body organs, blood counts and hemoglobin, urinalysis, X-rays of long bones and centers of ossification, visual-acuity tests, and audiometric examinations. I can say without equivocation that after 7 years of fluoridation no difference has been observed between the children of Newburgh and Kingston. The children of Newburgh are not suffering from malnutrition, kidney damage, or any other pathology any more than the children of Kingston or any other community. As a matter of fact the children of Newburgh are healthier; they have less tooth decay.

In speaking of water fluoridation, there are several fluoride compounds available for this purpose. Among these are sodium fluoride, hydrofluoric acid, and sodium silicofluoride. For small cities and towns sodium fluoride is recommended. Because of its solubility it is readily adaptable for use in inexpensive feeding equipment and the chemical is available in moderately abundant supply.

In considering the toxicity of fluorides, my remarks will be limited to a discussion of sodium fluoride. Sodium fluoride is a white crystalline salt. In commercial form, it is dyed nile green or light blue to distinguish it from other salts that are white. It is a very toxic substance, 4 or 5 grams or a tablespoon being a fatal dose. Yet in quantities of 1 part per million fluorine, it is perfectly safe to use in communal water supplies. One part per million is a very small amount. One way of visualizing this amount, is that if one drinks on the average of 2 quarts of water a day containing 1 part per million fluorine he consumes, roughly 4 milligrams of sodium fluoride. Since 4 grams or 1 tablespoonful is a lethal dose, to get this amount, one would have to consume 1,000 times the amount of water he normally drinks in a day at 1 time, or 500 gallons of water at 1 sitting, which is an impossibility. One-quarter of a gram of sodium fluoride, when swallowed at one time may produce nausea and vomiting. In terms of fluoridated water, instead of the customary 2 quarts a day, you would have to drink 125 times that much, or 63 gallons at 1 time—again an impossibility.

We hear from those opposing fluoridation, that fluoridated water might produce crippling fluorosis. This is observed only in areas where the residents consume at least 20 milligrams of fluoride a day over a period of 10 to 20 years. In case of water fluoridation at 1 part per million of fluorine, instead of 2 quarts of water a day, one would have to drink at least 2½ gallons of water daily over a 10- to 20-year period, which is again over 10 times the average daily water consumption. As Cox and Hodge put it, "It is impossible to imagine any set of circumstances in which the fluoride might become sufficient to bring about chronic high-grade fluorosis." In using 1 part per million of fluoride in the water supply, there may be some possibility of getting mottled enamel, if water consumption, during the formation of the teeth, was greatly increased day in and day out. However, water consumption in an area is fairly constant and it is highly doubtful whether any mottling produced would be of sufficient import to be esthetically significant since it would probably be of the very mildest type. The question is often asked whether there was danger of getting a lethal dose if the machine should become defective. Roughly 20 pounds of sodium fluoride

are required to treat each million gallons of water at the 1 part per million fluoride level. To get 4 grams at 1 time would require, not 20 pounds per million gallons water, but 10 tons per million gallons water. No machine or human could make that error for the capacity of the machine would not be that great.

As a matter of fact, in discussing toxicity, there are many instances that can be cited where a chemical may be lethal in large amounts and beneficial in small amounts. Iodine, for instance, is poisonous in large quantities. Most of you have seen the "poison" label on a bottle of iodine. Yet in small quantities it is absolutely essential for the maintenance of life. Chlorine, used to kill bacteria in most of our water supplies, when used in minute proportions, was used as a poison gas in the First World War. Even common table salt, if consumed in large quantities, may produce death. Sodium fluoride is another example of a chemical, toxic in large quantities, and beneficial in small, controlled doses.

How fluorides work to produce this reduction in dental caries has still not been completely settled. When consumed in the water supply during formation of the teeth it probably changes a portion of the crystalline structure of the tooth from a hydroxylapatite to a fluorapatite. We know from minerology that the fluorapatite rocks are very hard and very resistant to acid erosion. We now believe that dental caries is caused by the action of oral bacteria on sugars and carbohydrates in the mouth. The sugars are converted to acid, and the acid, initiates the carious lesion. If we can build a tooth structure resistant to these acids, then it should be resistant to tooth decay. We believe that this might be one explanation for the action of fluorine. When consumed in communal water supplies over a great number of years, even in minute quantities of 1 part per million, there may be some topical or surface action. As an analogy, it is like building a house of stucco. If you want a green house you can either include the green paint or pigment in the plaster, or you can apply the green paint to the surface after the plaster has set. By either means, the result is a green house, although the green paint incorporated in the plaster will probably last longer.

SUMMARY

In summary, may I say that there is evidence to indicate that fluorides used in communal water supplies will reduce dental caries. The reduction once acquired should persist for life. There is absolutely no reliable evidence to indicate that 1 part per million of fluorine incorporated into the communal water supply will produce deleterious effects. It is recommended that any community that has a supervised communal water supply should fluoridate its water.

Better Dental Health Through Water Fluoridation—A Progress Report

(Zachary M. Stadt)

INTRODUCTION

The purpose of this first Public Health Institute, as noted by Dr. Dummett, is to bring together the most promising or currently best thinking in the several fields of public health, with special emphasis on their application to the health needs of people in the rural areas.

Water fluoridation, as a proved method for the mass partial prevention of dental decay, can be applied wherever there is a community water-distribution system. Today, Norwood, Wash., with a population of 150 people, is adding fluoride to its water supply for expected dental health benefits. In time, it should be possible to assure that all water supplies, private or communal, will have beneficial fluoride concentrations.

BROAD ENDORSEMENT

The evidence demonstrating dental health benefits derived from water-borne fluorides is so overwhelmingly abundant and constantly increasing, that the measure is now endorsed by important international, national, and local groups concerned with health. Those organizations and agencies include the Interassociation Committee which is composed of the American Dental Association, the American Medical Association, the American Hospital Association, the American Nurses' Association, the American Public Health Association and the American

Public Welfare Association. Other endorsers are the Federation Dentaire Internationale, the National Research Council, the United States Public Health Service, the State and Territorial Health Officers, the State and Territorial Dental Health Directors, the American Association of Public Health Dentists, the majority of State dental societies, many State health departments, an increasing number of State medical societies, and hundreds of county dental and medical groups, boards of health, local professional organizations, and lay organizations such as the Jaycees, Rotarians, Lions, and Kiwanis.

GROWTH AND DEVELOPMENT OF FLUORIDATION

Among those who have contributed to a better understanding of the fluorine-dental caries relationship are the moderator of this symposium, Dr. J. F. Volker (1) and our essayist Dr. S. B. Finn (2). From their observations and those of others (3) and (4) the adaptation of observed phenomena to practical application was but one step. On August 19, 1942, Dr. W. L. Hutton, health officer, proposed to the Brantford, Ontario, Board of Health that water fluoridation should be established for dental health benefits. The Provincial authorities refused the request (5).

In 1945, four studies were started: (*a*) Grand Rapids-Muskegon in Michigan; (*b*) Southbury-Mansfield, Conn.; (*c*) Newburgh-Kingston, N. Y.; and (*d*) Brantford-Sarnia, Ontario, Canada. The number of people involved in the 4-study areas totaled around 240,000. From 1945 to 1950 growth was slow, increasing to some 44 places in 14 States. The big spurt in 1951 followed endorsement by the United States Public Health Service, based on findings derived from their Grand Rapids, Mich., study and the endorsement by the American Dental Association.

The following comparison illustrates the rapid increase in fluoridation during the last year (the figures are not absolute): (see table I).

THREE PERCENT OF 15,000 WATER SUPPLIES HAVE FLUORIDATION IN OPERATION OR APPROVED

In his report to the State and Territorial health officers, Knutson (6) noted that (*a*) 93 percent of all public water supplies are in communities of 10,000 population or less, (*b*) that of the 16,750 public water supplies in this country

TABLE 1.—*Status of fluoridation*

Status	Year	States	Places	Populations
A. In operation	April 1951	21	83	2,363,222
	March 1952	[1] 37	192	5,664,108
B. Approved	April 1951	12	93	5,251,903
	March 1952	40	250	13,750,024
C. Under consideration	April 1951	12	167	14,701,317
	March 1952	35	212	17,396,540
Total, A, B, and C	April 1951	45	343	[2] 22,316,442
	March 1952	45	654	[2] 36,810,662

[1] 37 States and District of Columbia.
[2] If we correct the totals for population increases and those on the distribution systems who are not included in the community census, we could add 5 percent, hence the April 1951 total would be 23,432,264 and the March 1952 total would be 38,651,195.

some 15,000 do not contain natural fluorides, and (*c*) that at the present rate of development it would take 150 years to complete the job of getting all the water supplies fluoridated.

At the present time some 200 communities are fluoridating and around 250 others have registered their approval, for a total of 450 places or 3 percent of the 15,000 communities with fluoride-deficient water supplies. If all 450 places should be in operation in the near future, they would represent a total population of some 20,000,000 people, or one-fifth of the 100,000,000 people on community water distribution systems. How long will the remaining 14,550 communities with their 80 million population continue to deprive themselves of this assured method of mass partial prevention of dental decay? It is the job of all of us here to see that the job is done in the next 5 years, not the next 150. Of course, it is a big job, but it gets easier every day.

IMPORTANCE OF DENTAL EXAMINATIONS

Water fluoridation promotion represents an opportunity for dental health education in a dramatic and impressive manner. Today many communities have one or more responsible health workers who have some knowledge concerning the extent of the dental-health problem. Any or all of these health workers will be interested in bringing the dental-health problem into controllable limits.

General knowledge about the dental-health problem is not enough. Practically everyone knows something about dental decay and diseases of the tissues which support the teeth, but how many hear or read specific dental-health facts for their own particular community? Because the answer to this question is very few, there should be made available reliable statistics on dental health. To obtain information about the extent of the dental-caries problem, dental examinations should be done on selected age groups. The proposed dental examinations can be done by the dentists or dental hygienists provided by the State department of health or by local dentists or dental hygienists employed by the local health department.

COOPERATION OF PARENT-TEACHER ASSOCIATION

When members of the Parent-Teacher Association act as recorders for the dental examiners it gives each parent first-hand information concerning the dental-health problem. Her observations are carried into the meetings of the Parent-Teacher Association with effectiveness. This can be the beginning of a drive to tell the people about the dental-health problem in the community. If there is no PTA, influential mothers should be drafted as recorders.

The dental examinations should be as extensive as possible, covering broad age groups. In all of these undertakings there is an important emphasis on the dental needs of children, but the long-range basic dental examinations should include representative groups at ages 20, 30, 40, 50, and 60.

The figures obtained from analysis of these examinations will provide a baseline against which future information can be compared. Of greater importance is the fact that it will be possible to tell the home folks the facts about the immediate dental-health problem in the community. When presented to the community in this way, dental-health statistics will begin to have the same significant impact on the people as information relating to VD, TB, cancer, cardiovascular-renal diseases, and infant and maternal mortality .

Standardized dental examination procedures can be arranged by the State dental director consulting with representatives of the State dental society, so that comparisons of dental findings from various communities will have a high degree of validity.

THE DENTAL PROBLEM AND EXPECTED BENEFITS FROM FLUORIDE

White children

Figure 1 combines Dean's graph (7) and (8) with Charlotte (N. C.) (9) data, all pertaining to children in the 12 to 14 age group. Using this information it is possible to demonstrate the fluorine-dental caries relationship in a practical way. Using Aurora as an example of what can be expected at around 1 to 1.20 parts of fluorine to a million parts of water, one can round off the figures and show that Charlotte white children (per 100) have 5 times as many teeth missing (60 to 11.4) almost 5 times as many teeth requiring extraction (17 to 3.5), twice as many teeth that have untreated caries (353 to 166.7), and more than 4 times as many teeth filled (418 to 99.4). For Charlotte white children age 12 and 14 there are 418 teeth filled and 60 extracted or a total of 478 teeth treated per 100 children. If the dental-caries experience at Charlotte for the 12- and 14-year-olds should be reduced to that observed at Aurora, then it should be possible to predict that after 14 to 15 years of fluoridation, with the same amount of services available, there will be few if any teeth with untreated dental caries and the few necessary extractions will have been fully taken care of, with a surplus of 197 services available for other age patients.

The data for Waukegan, Ill., and Charlotte, N. C., are particularly interesting because of the remarkable degree of similarity in findings and because the data represents the findings of Dean and his coworkers for Waukegan in the 1939–41 period, while the Charlotte data are derived from dental examinations by members of the Charlotte Dental Society and the speaker. Waukegan and

Charlotte will be cited in that order: Teeth extracted 69.5 and 60, extraction required 16.5 and 17, untreated decayed teeth 363.1 and 353, and teeth filled 361 and 418. Total dental-caries experience per 100 children: Waukegan, 810; Charlotte, 848.

Negro children

The importance of water fluoridation as a dental public health measure is brought into full relief when we examine the graphic analysis of the dental caries experience of Charlotte (N. C.) Negro children in the 12 and 14 age groups. The most striking figure is the number of teeth filled 29 per 100 children, or only 4 percent of the teeth attacked by decay; (Charlotte white children in the same age groups have almost 50 percent of their defective teeth filled.) Eighty-three percent of the teeth (605 per 100 children) have untreated dental decay.

REPORTS FROM STUDY AREAS

The data in the following tables give factual support to the benefits predicted from the fluoridation of community water supplies.

TABLE 2.—*The effect of fluoridated water on the number of caries-free children*

Place	Reference	Fluoridation		Age	Caries-free (percent)		Percent Increase (I), decrease (R)
		Started	Elapsed time (months)		Before fluoridation	After fluoridation	
(*a*) New York:	(10)				*1944–45*	*1950–51*	
Newburgh		May 1945	60	5– 6	18.2	49.2	I 170
					1945–46	*1950–51*	
Kingston [1]		do	60	5– 6	21.9	30	I 37
					1944–45	*1951*	
(*b*) Brantford, Ontario, Canada.	(11)	June 1945	77	5–16	5.18	15.97	I 208
					October–November 1945	*September 1951*	
Sheboygan, Wis.: (*c*) Kindergarten		March 1946	65–66		20.4	47.8	I 134
					February–March 1942	*October 1951*	
(*d*)		do	61–66	12–14	2.77	3.4	I 23
					1946	*1948*	
Evanston, Ill.	(14)	February 1947	12–22	6	41.04	15.87	R 24.57
				7	11.33	8.71	R 23.12
				8	6.09	8.18	I 34.31
				6– 8	11.55	11.26	R 2.5
					September 1946	*January 1951*	
(*e*) Ottawa, Kans.: No def teeth	(15)	September 1946	52	6	25	23	R 8
				7	13	17	I 31
No DMF teeth		do	52	6	76	79	I 4
				7	59	66	I 12
Madison, Wis.: No def surfaces.	(16)	June 1948	42	5	25.56	46.76	I 83

[1] Control city: (*a*) Percent children with caries-free deciduous cuspids, 1st and 2d molars; (*b*) no def-DMF deciduous or permanent teeth; (*c*) no def deciduous teeth; (*d*) no DMF permanent teeth; (*e*) water supply contained 0.30 p. p. m. F prior to fluoridation.

If the Charlotte Negro children derive the same benefits from fluoridated water as observed for white children at Aurora, Ill., then 14 to 15 years after continuous fluoridation at Charlotte we may expect that caries experience for the 12- and 14-year-olds will be around 300 teeth per 100 children instead of the present 725, or a probable reduction of around 55 percent. Even if there is no increase in available services, the 29 teeth filled will represent corrections of around 10 percent of the defects, as contrasted with the present 4 percent. On the other hand, untreated dental caries will be reduced proportionately from 605 to around 231 teeth (allowing 40 teeth for extraction), or a reduction of 60 percent. Here then is the most striking expectation: a 60-percent reduction in the number of teeth with untreated dental decay, without any increase in the amount of available dental services.

NUMBER OF CARIES-FREE CHILDREN INCREASES

Table 2 shows how fluoridated water has influenced the number of children who have no dental decay. At Newburgh, N. Y., (10) after 60 months, there has been a 170-percent increase in the number of 5- and 6-year-old children who have no decay of the primary cuspids and first and second primary molars. At Brantford, Ontario, Canada, (11) after 77 months, there has been an increase of 208 percent in the number of children without decay of the primary and permanent teeth for the 5 to 16 age group. At Sheboygan, Wis., (12) and (13) after 65 months, kindergarten children without decay of the primary teeth increased 134 percent, while 12- to 14-year-old children without decay of the permanent teeth increased 23 percent.

The significant increase in the number of children with no caries experience of the primary and/or the permanent teeth in the early study areas should be considered as of a preliminary nature, with the expectation that greater benefits will be presented in subsequent reports.

PRIMARY (FOUNDATION) TEETH HAVE LESS DECAY

Table 3 represents a summary of some of the findings for the primary teeth. While there may not be unanimity in the method of estimating caries experience, it remains that where fluoridation has been in progress long enough the results show definite reductions in dental caries. For the 5-year-olds, for example, there were the following improvements: Grand Rapids (17) 38.9 percent less caries, Newburgh (18) 59.9 percent less, Brantford (11) 54 percent less, Sheboygan (12) 53.7 percent less for the 5- to 6-year-olds, and 48 percent less for the 5-year-olds at Madison (16). The increases noted at Charlotte (19) are due to our method of examination recording. Only the primary teeth present at the time of the examination are accounted for, hence it may be assumed that with fewer teeth lost because of extraction the number present at the time of the later examination is greater. The findings for the primary teeth of the 5-year-olds at Brantford after 77 months of fluoridation may very likely represent the maximum improvement.

FLUORIDATION BENEFITS PERMANENT TEETH

Reports on the reduction of caries experience for the permanent teeth have been collected in table 4. While the results are not in specific agreement, it is impressive that all reports indicate definite reductions, with the youngest age groups exhibiting the greatest benefits. Only the Brantford reports provide specific information for a group of 6-year-olds who had been consumers of fluoridated water since birth. Hence, most of the other reports are of a preliminary nature. It should be noted here, too, that preliminary definitive results will not be forthcoming until a group of 12- to 14-year-old children, who since birth have been continuous residents in one of the fluoride study areas, can be compared with a similar age group in a control city. To this we might add that an equally interesting comparison will be with the findings for the 12–14 age group in the study area during the prefluoridation period. Hence, the more extensive comparisons will not be available until around 1959–60. If the older age groups are to be included, and they should be, then more complete results will not be available until some time in the 1960–80 period. There are some who want to wait until that time before they give their approval, but in many instances they will have given it long before that—for fluoridation is no longer a mere proposal. These benefits noted here make fluoridation a fact.

TABLE 3.—*Effects of fluoridated water on deciduous teeth*

Place	Reference	Fluoridation		Age	Caries experienced		Percent, reduction (R), increase (I)
		Started	Elapsed (months)		Before fluoridation	After fluoridation	
					1944–45	*1949–50*	
Grand Rapids, Mich. (def) [1]	(17)	January 1945	54–60	5	5.4	3.3	R 38.9
				6	6.4	4.6	R 28.1
				[2] 8	5.8	4.7	R 19.0
				9	4.6	4.4	R 4.3
				10	2.8	2.9	I 3.6
					1944–45	*1949–50*	
Newburgh, N. Y.. (DF, percent per 100 teeth).[3]	(18)	May 1945	48	5	27.2	10.9	R 59.9
				6	34.2	18.6	R 45.6
				7	42.3	30.3	R 28.4
				8	48.0	38.9	R 18.9
					1944–45	*1950–51*	
	(10)	do	60	5–8	37.0	20.1	R 45.6
					1944–45	*1951*	
Brantford, Ontario, Canada	(11)	June 1945	77	5	5.63	2.59	R 54.0
				6	6.76	3.44	R 49.1
				7	6.78	4.39	R 35.2
				8	6.40	4.24	R 23.9
				9	6.10	4.87	R 20.1
				10	3.75	3.17	15.5
					1945	*1951*	
Sheboygan, Wis. (DEF) [4]	(12)	March 1946	66	5–6	4.80	2.22	R 53.7
					1946	*1948*	
Evanston, Ill. (DEF) [4]	(14)	February 1947	12–22	6	4.83	5.08	I 15.5
				7	5.50	5.41	R 1.6
				8	5.77	6.20	I 7.4
					1949	*1951*	
Charlotte, N. C.:	(9)						
Preschool, white		April 1949	20–21	5	4.09	4.75	I 16.1
				6	4.45	4.82	I 9.6
Preschool, Negro		do	20–21	5	3.84	4.63	I 20.6
				6	3.78	4.48	I 18.5
					September 1946	*January 1951*	
Ottawa, Kans. (def) [5]	(15)	1946	52	6	4.0	3.6	R 10
				7	4.9	4.3	R 12
					1947	*1951*	
Madison, Wis. (def surfaces)	(16)	June 1948	42	5	8.14	4.23	R 48

[1] def—decayed, extraction indicated, or filled.
[2] 7-year age group omitted; too few included in examinations.
[3] DF—decayed or filled deciduous teeth.
[4] DMF or DEF (as used here)—decayed, extracted, or filled deciduous teeth.
[5] Water supply contained 0.30 p. p. m. F prior to fluoridation.

NOTE.—At Charlotte, N. C., only the deciduous teeth present at the time of examination are accounted for, hence it is assumed that with fewer teeth lost due to extractions the number present at the time of the later examination is greater.

For the 6-year age group there are the following reductions in dental caries of the permanent teeth: Grand Rapids, (17) 59 percent; Newburgh, (18) 77.6 percent; Brantford, Ontario, (11) 73.2 percent; Evanston, (14) 49.8 percent; Marshall, (21) 47 percent; and Ottawa, Kans., (15) 15 percent; Charlotte (19) preschoolers—white, 25 percent, Negro, 12 percent. Dental caries reductions in the other age groups in some study areas range from around 30 percent for the 10-year-olds to 6 to 25 percent for the 14-year-olds.

PROMOTION OF SUPPORT FOR FLUORIDATION

We have noted the impressive list of responsible health groups which endorse fluoridation, the need for demonstrating the extent of the dental health problem, and the extensive dental health improvements places where fluoridation programs have been in operation. All this information should be enough to challenge every dentist and physician in the Nation, every health officer, every health worker and every community-conscious citizen, to bring fluoridation into being in their home towns without delay.

In many instances the initiative for fluoridation comes through a dentist or local dental group, but there is no reason why health officers, health educators and other members of the community cannot initiate the promotion. In many States, the junior chambers of commerce have made statewide fluoridation pro-

motion a major goal. Fluoridation programing is a prime activity of the North Carolina Dental Society. At Charlotte, N. C., the Jaycees along with the Charlotte Dental Society and the Charlotte Council of Parent-Teacher Associations were powerful factors in obtaining city council approval in June 1948.

After the local dental group has endorsed the program, support should be sought from the medical group at a meeting of physicians alone, or a combined meeting of physicians and dentists. In small communities it should be possible for the dentists to give leadership and gain the broad support of many civic organizations without any loss of time. When all these have passed resolutions on behalf of fluoridation, at meetings where the subject has been presented, then the matter should be brought to the board of health for their action. Finally, a

TABLE 4.—*Effects of fluoridated water on permanent teeth*

Place	Reference	Fluoridation		Age	DMF		Percent reduction (R), increase (I)
		Started	Elapsed (months)		Before fluoridation	After fluoridation	
Grand Rapids, Mich.	(17)	January 1945	54-60		*1944-45*	*1949-50*	
				6	0.78	0.38	R 51.3
				9	3.90	2.48	R 36.4
				11	6.41	4.69	R 26.8
				13	9.73	8.11	R 16.7
				16	13.50	11.83	R 12.4
Average					6.86	5.50	R 17.0
Southbury Training School, Conn.	(20)	April 1945	48	5-16			R 39
Newburgh, N. Y. (DMF per 100 erupted permanent teeth).	(18)	May 1945	48		*1944-45*	*1949-50*	
				6	8.5	1.9	R 77.6
				8	17.1	9.9	R 42.1
				10	21.9	15.9	R 31.0
				12	25.3	18.8	R 25.6
				6-12	20.6	13.9	R 32.5
						1950-51	
	(10)	do	60	6-12	20.6	13.0	R 36.9
					1944-45	*1951*	
Brantford, Ontario, Canada	(11)	June 1945	77	6	0.41	0.11	R 73.2
				8	2.44	1.07	R 56.1
				10	3.80	2.57	R 32.4
				12	6.30	4.31	R 31.6
				14	8.60	6.41	R 25.5
					1945	*1951*	
Sheboygan, Wis. (grades 4, 7, 8, and 9).	(13)	March 1946	66		3.03	2.12	R 30.0
					8.54	6.54	R 23.4
					1945	*1950*	
Marshall, Tex. (def, DMF combined).	(21)	May 1946	60	6	7.06	3.69	R 47
				8	8.97	3.76	R 58
				10	7.58	5.48	R 28
				12	6.46	6.68	I 3
				14	8.20	6.70	R 18
					1946	*1948*	
Evanston, Ill.	(14)	February 1947	12-23	6	0.468	0.235	R 49.8
				7	1.535	1.035	R 32.5
				8	2.499	1.941	R 22.3
					1946	*1949*	
	(22)	do	23-24	12	7.63	6.82	R 10.6
				13	10.09	8.57	R 15.1
				14	11.66	10.87	R 6.8
					1947	*1950*	
Lewiston, Idaho	(23)	June 1947	36	7	1.4	0.6	R 58.0
					2.6	1.7	R 35.0
					3.7	2.8	R 25.0
					1949	*1951*	
Charlotte, N. C.:	(19)						
Preschool, white		April 1949	20-21	6	0.61	0.46	R 25.0
Preschool, Negro		do	20-21	6	0.69	0.61	R 12.0
					September 1946	*January 1951*	
Ottawa, Kans.[1]	(15)	September 1946	52	6	0.41	0.35	R 15.0
				7	0.70	0.62	R 11.0

[1] Water supply contained 0.30 p. p. m. F. prior to fluoridation.

Source: City Health Department, Charlotte, N. C., fluoridation demonstration, April 24, 1950.

TABLE 5.—*Seasonal variations in fluoride levels*

Month	Average air temperature		Period beginning (nearest Saturday night to the date)	P. p. m. F. (deviation, plus or minus 0.10)
	Since 1878	1945-49		
January	41.2	44.1	Jan. 1	1.10
February	43.9	45.4	Feb. 1	1.10
March	50.4	54.6	Mar. 15	1.05
April	59.8	62.6	Apr. 15	0.95
May	68.9	69.0	May 1	0.80
June	75.5	77.4	June 15	0.70
July	78.4	79.1	July 1	0.60
August	77.1	77.5	Aug. 1	0.65
September	71.5	72.3	Sept. 1	0.75
October	61.7	63.0	Oct. 1	0.85
November	50.6	52.9	Nov. 1	0.95
December	43.0	44.4	Dec. 1	1.05

delegation representing the various professional and lay organizations endorsing the measure should present the proposal to the governing body of the community for its approval.

From the very beginning and all through the planning, the water-plant operator should serve as a consultant to the principal organization or committee promoting fluoridation.

Every meeting on fluoridation and every endorsement or resolution favoring the proposal should be widely publicized in the press and on the radio. A series of prepared articles should be published in the press to enlighten the people in the community.

When an outstanding speaker is brought in for a big meeting, an interview on the radio and with the press should be arranged. At these meetings, key people from all organizations should be invited guests for the occasion. The press should be invited to every affair.

Before the proposal is presented to the governing body of the community, approximate initial-cost figures and all subsequent annual costs should be established, with some estimation of the per capita cost initially and per annum thereafter.

Because of the large number of approved programs in operation and because of the benefits reported from the study areas, promotion of fluoridation as a rule will not encounter objections from anyone. However, there are some diehard opponents, who may turn up in your town. They will accuse the proponents of every conceivable form of misrepresentation. Occasionally, these may poison the minds of enough people to forestall early development of a fluoridation program. Be patient but firm with them, for in many instances their arguments will be the source of their own defeat.

THE COST OF FLUORIDATION

The initial cost will cover the fluoride feeder, accessories, installation, possibly some laboratory equipment, reagents and the chemical. These will vary with the size of the town. However, if the cost of the capital equipment is amortized over a period of 20 years, the per capita cost per year might approximate 6 to 12 cents, depending on the chemical that can be used. Sodium silicofluoride will be less expensive than sodium fluoride, but its use will be limited to dry feed installations. Much of this will be included in the United States Public Health Service film, Drop in a Bucket, which Dr. Carl L. Sebelius has brought to this symposium for presentation at the conclusion of this paper.

FLUORIDE LEVELS

In the Southern States, there should be no small amount of interest in the fluoride levels to be prescribed. The adjustment of fluoride levels, that is the amount of fluoride to be added at various periods of the year, will be based on climatological conditions. In Georgia, Dean (24) examined 12-, 13-, and 14-year-old children at Brunswick (water F. 0.50 p. p. m.) and Moultrie (water F. 0.70 p. p. m.) and noted that there were incidencies of the mildest type of dental fluorosis, 12.6 and 9 percent for Brunswick and Moultrie respectively

(mean annual temperature 68° F.). He indicated that such incidences would normally be associated with domestic water having approximately 1 part per million F., under climatological conditions prevailing in the Chicago area, with its mean annual temperature of about 49 degrees Fahrenheit. This "very mild" fluorosis has been described by Dean (25) as "small opaque paper-white areas scattered irregularly, involving less than 25 percent of the tooth surface" and of no esthetic consequence.

SEASONAL FLUORIDE VARIATIONS AT CHARLOTTE

At Charlotte, N. C., with a mean annual temperature of 60 to 62 degrees Fahrenheit, it was concluded that fluoride levels which were satisfactory in more northerly places would not necessarily hold for us. When we were in the discussion stage in 1947, Dr. Finn strongly endorsed a fluoridation program at Charlotte, noting that what might apply elsewhere would not necessarily be satisfactory for us. Here then was practical confirmation of his observation. It was obvious that more water was consumed (hence more fluoride ingested) over a longer period at Charlotte than at places in the northern tier of States.

The speaker and R. S. Phillips, superintendent of plants of the Charlotte Water Departmbent, examined many water consumption figures which might serve as an index of seasonal variations of water consumption for drinking purposes (26). Figures for bottlers of soft drinks and the monthly sales variations of a bottler of spring water were studied and plotted for a 12-month period and it was noted that the curves paralleled the curve for the mean monthly air temperature, as illustrated in figure 2. With this as a guide, a schedule of season variations in fluoride levels was prescribed, table 5, ranging from a low of 0.60 parts of fluorine per million parts of water in July to a high of 1.10 p. p. m. F during January and February, providing an average fluoride level for the year at slightly less than 0.90 p. p. m. The schedule has been in operation since March 1950 without any difficulty of any consequence.

FLUORIDE LEVELS IN FLORIDA

It is interesting to note that while most State regulations allow a maximum of 1.50 p. p. m. F, Florida (27) has established the following limitations: From November through April, preferably 0.8 to 1.10 p. p. m. F, not to exceed the latter. May through October 0.60 to 0.80 p. p. m. F.

FLUORIDATION NOT 100 PERCENT DENTAL CARIES PREVENTIVE

It must be repeatedly emphasized that fluoridation may prevent only as much as 50 to 60 percent of dental caries. Unless there is a sustained program of dental-health education, there is a great likelihood that over the years many people will develop a false sense of dental-health security. For this reason, we must continue to stress (1) the need for a program of early and regular dental care to prevent tooth loss, (2) moderation in the consumption of carbohydrates, and (3) brushing or rinsing the teeth immediately after eating.

FLUORIDATION IMPLICATIONS FOR THE RURAL AREAS

In most rural areas there are no community water systems, for rural people have their own wells, or other sources of water. For these people, numbering some 55 millions, it may be possible to develop methods for providing fluoridated water for the infants and children; for example, a small tablet could be prepared which when dropped into a quart of water would provide the desired fluoride concentration for a particular area, for a particular water supply, and for a particular season.

TOPICAL FLUORIDE PROGRAMS MUST GROW

For the present there must be a broad development of programs for the topical application of fluorides. For example, in North Carolina around 73 percent of the population are not served by community water-distribution systems. To provide topical fluoride applications for children in such a large population group it would be necessary to have a considerable increase in the available number of dental hygienists. It is not likely that these will be forthcoming in the near future unless some broad dental hygienist training program is set up on a local or regional basis, with liberal scholarships offered to those who will work at

least 1 year in the topical fluoridation program (under State or local health department direction) in return for every year of training. There should be more schools of dental hygiene established and this is especially important for training Negro girls.

SUMMARY

In summary then, we have noted the following:

1. Water fluoridation as a measure for the mass partial prevention of dental caries is now endorsed by the principal agencies and organizations concerned with health.
2. In March 1952, fluoridation is in operation, approved or receiving serious consideration in 654 places in 45 States for an estimated population of some 38,651,195 people.
3. The 200 places in operation and the 250 places where fluoridation has been approved represent a total population of some 20 million people, but only 3 percent of the 15,000 communities that have fluoride-deficient water supplies.
4. Dental examinations are basic to demonstrating the dental health problem.
5. Charlotte white and Negro 12 and 14 year olds are compared with the same age group at Aurora.
6. Reports from the study areas show considerable increases in the number of children with no dental caries, or with reduced caries experiences of the primary and permanent teeth.
7. Promotion of a fluoridation program has been discussed.
8. Fluoride levels may be lower in the Southern States and may be varied according to the season.
9. It has been noted that water fluoridation is not a 100 percent dental-caries preventive.
10. For the 55 million people who are not served by community water supplies, there should be programs for the topical application of fluorides.
11. There is serious need for more schools of dental hygiene, especially for Negro girls. A liberal scholarship program has been suggested.

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Fluoridation in the Prevention of Dental Caries [1]

Clifton O. Dummett, D. D. S., Chief, Dental Service, Veterans' Administration Hospital, Tuskegee, Ala.

It is significant and appropriate to begin this discussion on fluoridation with a statement by Col. John R. Wood, who is chairman of the Medical Research and Development Board of the Office of the Army Surgeon General. He told the American Pharmaceutical Manufacturers Association, "Badly needed is more research to find ways of preventing the enormous waste of human teeth. More than 40 percent of men entering the services in World War II needed immediate treatment to save their teeth about to be lost, and one-third of them needed treatment for toothaches. Five percent need new teeth to have enough to chew with. Even to date, our troops are losing collectively well over a million teeth per year. The cost of this care, at the most conservative civilian rate, exceeds $18 million a year. Yet, only about a million dollars a year are being spent on dental research, only part of that on methods of halting this waste." This statement by a physician discussing the topic of dental research to a group of pharmacists is illustrative of the relationships that exist between these professions.

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[1] Presented to a joint session of the Indiana State Medical, Dental, and Pharmaceutical Associations, May 20, 1953, Gary, Ind.
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There is among the American people, a great need for more adequate dental services. This need has become recognized because much greater emphasis is being placed on the necessity and importance of visiting dentists regularly. The inability to fulfill a large portion of this need has occupied the attention of members of the dental profession. The dearth of personnel and facilities for training are conditions of which everyone is aware. It has become necessary, therefore, to attack the problem on limited fronts. Today when a dental program is established in a community, it is common for the dentist to limit his services almost entirely to emergency dental care. Such a program is certainly not satisfactory.

Similar limitations occur in dental public health programs. There is a tremendous need for more adequate dental care for children. An apathetic attitude exists on the part of many people toward dental diseases insofar as they affect children. Such a commonplace acceptance of dental disease in children constitutes a real danger and an obstacle to progress in dental public health. Often heard are statements that the problem is too great to attack or that dental disease lacks in public appeal.

Dental caries is the first disease that has come in for a concerted attack by dental researchers, who have been responsible for the accumulation of much important information on the topic of fluoridation.

It is well established that certain preventive dental procedures are known to reduce the incidence of dental caries if they are applied at an early period. Some control of dental caries can be accomplished by the restricted use of refined carbohydrates, the use of topically applied fluorides to the teeth, the controlled fluoridation of municipal water supplies and the proper use of the toothbrush especially following the consumption of fermentable sugars. The use of fluorides, especially the fluoridation of public water supplies is rapidly developing into a comprehensive nationwide movement. The division of dental public health of the United States Public Health Service considers the promotion of controlled fluoridation, its priority one project. This is also true of the divisions of dental health of State health departments of this country as well as dental society groups. The committees of workshop, public relations, and dental health of the Tennessee State Dental Association recently conducted a workshop which had as its theme, "Help yourself to water fluoridation." The Institute of Public Health which was presented by the Dental Service of the Veterans' Administration Hospital in Tuskegee, Ala., in March 1952, had as one of its objectives, the presentation of modern scientific information about water fluoridation. Basically, this institute stressed the fact that all individuals interested in dental health should think, plan, and work together toward the goal of better dental and general health. The controlled fluoridation of water is a start in the right direction.

If there is to be a solution to the dental caries problem, it will come through prevention. If prevention is to progress in eliminating the vast reservoir of untreated dental caries for future generations, preventive means must be applied to large segments of the population. Discouraging the sale and limiting the use of sugars, though effective in reducing caries, are not procedures that are readily followed. Human beings are not easily dissuaded from the use of refined carbohydrates. It would seem that the best means of reaching the entire population equitably is through a community water supply. Water is a commodity that is consumed consistently by all persons.

It is highly advisable that any agent used for the purpose of reducing dental decay for the entire population should have five important requisites: (1) it must be of unquestionable value, (2) it must be relatively inexpensive, (3) it must be safe to use, (4) it must be easily utilized on a population basis, and (5) it must require little or no effort on the part of the individual benefited. It would appear that water fluoridation or the treatment of a communal water supply meets the requirements of a preventive agent most adequately. Nowhere in medicine, pharmacy, or dentistry has a preventive agent had such a vast amount of irrefutable evidence to recommend it and so little reliable confirmed evidence against it. The large amount of epidemiological and experimental evidence that has gone into the establishment of the fluorine-caries hypothesis is most impressive.

As early as 1867, Magitot suggested that fluorine was associated in some way with the integrity of the tooth. In 1892, Sir Crichton Brown writing in the British medical journal, Lancet, indicated that teeth contained more fluorine than any other tissue in the body and that the fluorine was there to pre-

vent dental decay. He suggested that foods rich in this element should be incorporated in the diet of children for that purpose. From 1908 to 1916, Drs. Black and McKay thoroughly studied the pathological condition of the teeth endemic among those reared in certain limited areas of southwestern United States. Among these individuals the teeth were poorly formed, stained, and pitted. To this disfiguring disease, they applied the term "mottled enamel." They observed that "mottled enamel" could be acquired only if persons resided in those areas during the period of tooth formation. Once acquired, it remained for life. They further observed that people moving into these areas after their teeth were formed did not acquire this disease. They established the fact that the cause of mottled enamel was in some way waterborne. In 1931 through chemical analysis of water and through animal experiments, it was discovered that mottled enamel was caused by excessive amounts of fluorine in the drinking water supply. In 1938, Dean and his associates reexamined these endemic areas of southwestern United States and other areas in the Midwest where fluorosis was endemic. They found that the severity of the fluorosis was directly proportional to the fluorine content of the water consumed. Esthetically siguificant, mottling occurred only in individuals consuming over 1.5 parts per million of fluorine. The epidemiological studies of Dean and his associates further indicated that individuals consuming water containing one or more parts per million of fluorine had approximately 60 percent less dental caries than individuals in neighboring communities where fluorine-free water was consumed. They also made the important deduction that the reduction in dental caries was not inversely proportional to the fluorine content of the water supply. As a matter of fact there was just as great a reduction when the water contained 1 part per million of fluorine as when it contained 14 parts per million, and furthermore, one did not get disfiguring fluorosis. These observations by Dean and others from different areas of the world received additional confirmation from animal experiments and from chemical analyses of the fluorine content of sound and carious teeth. Recent studies indicate that this resistance to caries once acquired persists throughout life. There are actually 8 million persons in the United States consuming natural water containing 1 part per million of fluorine or over.

The question soon presented itself as to why could not fluorine be added artificially to the water supplies in areas where fluorides were deficient. In 1938, Cox, speaking before the Pennsylvania Waterworks Association, suggested artificial fluoridation. By 1945 a number of communities in the United States were fluoridating their water on a demonstration basis.

One of the community demonstration projects was the Newburgh-Kingston study which was initiated in 1944 by the New York State Health Department. A principal investigator in this project was Dr. Sidney Finn, now a faculty member of the University of Alabama's Dental School and consultant to the Dental Service of the Veterans' Administration Hospital Hospital in Tuskegee. For this demonstration project, Newburgh, N. Y., 60 miles above New York City, had its water fluoridated with 1.2 parts per million of sodium fluoride on May 2, 1945. Kingston, a similar sized city 30 miles above Newburgh, continued to drink fluorine-free water and served as a control. Annual dental examinations were made on the entire school populations of over 300 children in each city. At the end of 4 years, laboratory, clinical, and roentgenographic examinations all showed a markedly reduced caries activity in the schoolchildren of Newburgh. Medical studies were carried on at the same time to determine whether or not there were toxic systemic effects. Complete physical examinations consisting of height and weight measurements, examination of body organs, blood counts and hemoglobin, urinalysis, roentgenograms of long bones and ossification centers, visual acuity tests and audiometric examinations were made on the children in Newburgh and Kingston. After 7 years of fluoridation, no difference has been noted between the children of the 2 cities.

There are several fluoride compounds available for water fluoridation. Among these are sodium fluoride, hydrofluoric acid and sodium silicofluoride. For small cities and towns sodium fluoride is recommended. Because of its solubility it is readily adaptable for use in inexpensive feeding equipment and the chemical is available in moderately abundant supply. It is a white crystalline salt which in commercial form is dyed nile green or light blue to distinguish it from other salts that are white. It is a very toxic substance, four or five grams, or a tablespoonful being a fatal dose. Yet in quantities of one part per million of fluoride it is perfectly safe to use in communal water supplies. One

part per million is a very small amount. If one drinks on the average of 2 quarts of water a day containing 1 part per million of fluorine, he consumes roughly 4 milligrams of sodium fluoride. Since 4 grams or one tablespoonful is a lethal dose, to get this amount, one would have to consume one thousand times the amount of water he normally drinks in a day at one time, or 500 gallons of water at one sitting. One quarter of a gram of sodium fluoride when swallowed at one time may produce nausea and vomiting. In terms of fluoridated water, instead of the customary 2 quarts a day, one would have to drink 125 times that much or 63 gallons at one time. Those opposing fluoridation insist that fluoridated water might produce crippling fluorosis. This is observed only in areas where the residents consume at least 20 milligrams of fluoride a day over a period of 10 to 20 years. In the case of water fluoridation at 1 part per million of fluorine, instead of 2 quarts of water a day one would have to drink at least 2½ gallons of water daily over a 10 to 20 year period, which is again over 10 times the average daily water consumption. Hodge, of the University of Rochester, has said that it is impossible to imagine any set of circumstances in which the fluoride content might become sufficient to bring about chronic high-grade fluorosis.

There are many instances that can be cited where a chemical may be lethal in large amounts and beneficial in small amounts. Although iodine is a poison, small amounts of it are essential for the maintenance of life. Chlorine is used to kill bacteria in water supplies. It is common knowledge that it was used as a poison gas in the First World War. Even common table salt if consumed in large quantities may produce death. Sodium fluoride is another example of a chemical which might be toxic in large quantities, but is beneficial when used in small quantities.

The evidence corroborating dental health benefits derived from waterborne fluorides is so overwhelmingly abundant that the measure is now endorsed by important international, national and local groups concerned with health. These organizations and agencies include the interassociation committee which is composed of the American Dental Association, the American Medical Association, the American Hospital Association, the American Nurses Association, the American Public Health Association and the American Welfare Association. There are several other endorsers of fluoridation: among them are the Federation Dentaire Internationale, the National Research Council, the United States Public Health Service, the State and Territorial Health Officers, the State and Territorial Dental Health Directors, the American Association of Public Health Dentists, a large majority of State dental societies, many State health departments, an increasing number of State medical societies and hundreds of county dental and medical groups, boards of health, local professional organizations and lay organizations such as the Jaycees, Rotarians, Lions, and Kiwanis.

The impressive list of reponsible health groups which have endorsed fluoridation should be enough to challenge every dentist, physician, pharmacist, nurse, health officer, health worker, and every citizen to foster fluoridation in needed areas. In many instances the initiative of fluoridation comes through a dentist or local dental group, but there is no reason why health officers, health educators, physicians, or other members of the professions and communities cannot initiate the promotion. After the local dental group has endorsed the program, support should be sought from the medical group at a meeting of physicians alone or a combined meeting of physicians and dentists. In small communities it should be possible for the dentists to give leadership, and gain the broad support of many civic organizations without any loss of time. When all these groups have passed resolutions on behalf of fluoridation at meetings where the subject has been presented, then the matter should be brought to the board of health for its action. Finally, a delegation representing the various professional and lay organizations endorsing the measure should present the proposal to the governing body of the community for its approval. From the very beginning and all through the planning steps, the water plant operator should serve as a consultant to the principal organization or committee promoting fluoridation. Every meeting on fluoridation and every endorsement or resolution favoring the proposal should be widely publicized in the press and on the radio. A series of prepared articles should be published in the newspapers to enlighten the people of the community. Approximate initial costs and all subsequent annual costs should be established and there should be some estimation of the per capita cost initially and per annum thereafter. Because of the large number of approved programs in operation and because of the benefits reported from the study areas, promotion of fluoridation as a rule will not encounter objections

from anyone. However, there are some tenacious opponents who may oppose it. They will accuse the proponents of every conceivable form of misrepresentation. Occasionally these persons may poison the minds of a sufficiently large number of people, so that the early development of a fluoridation program will be forestalled. In such cases it is absolutely essential to be patient but firm, for in many instances their arguments will be the source of their own defeat.

It must be repeatedly emphasized that fluoridation may prevent only as much as 50 to 60 percent of dental caries. It is not 100 percent dental caries preventive. Unless there is a sustained program of dental health education, there is a great likelihood that over the years, people may develop a false sense of dental health security. For this reason, it is essential for dentists and physicians to continue to stress the need for a program of early, regular dental care to prevent tooth loss. The need for moderation in the consumption of carbohydrates, and the necessity for brushing or rinsing the teeth immediately after eating are very important additional essentials.

THE NEW JERSEY STATE DENTAL SOCIETY,
May 18, 1954.

Hon. CHARLES A. WOLVERTON,
Chairman, Interstate and Foreign Commerce Committee,
House of Representatives, Washington, D. C.

DEAR SIR: I am writing at this time in connection with the scheduled hearings on the Wier bill (H. R. 2341) which I understand are to be held on May 25, 26, and 27. As chairman of the council on fluoridation of the New Jersey State Dental Society, I am, naturally, most interested in the disposition of this bill.

I have been following the reports in dental and medical literature on the investigation of the possible harmful effects of fluoridation on health, and in the many years of review I find that there is no authenticated indication that any effects other than a sharp decrease in the amount of dental decay results from the introduction of the recommended amount of fluoride ion to drinking water.

Anyone who takes the trouble to review the literature on the subject cannot help but be impressed by the pains to which these investigators have gone to exhaust all the possibilities of any ill effects, not only on the general health of the individual, but of any possible detrimental effect on any industrial process or product. The conclusions are uniformly the same, and have been reconfirmed over and over again. In addition to all this work done in areas where the fluoride ion has ben artificially added to the drinking water, we have the unique situation where statistics are available on the health, birth rate and death rate, incidence of various diseases, etc. in those areas of our country where the fluoride ion exists naturally in the drinking water, and where some 3½ million persons have been ingesting this water all their lives. Medical societies have reported that in these areas where fluoride has been present for generations the rate of birth, death, sickness, bone fracture, etc., is approximately the same as in any other part of the country. There are those who maintain that such may be the case in naturally fluoridated areas but they imply that artificially added fluoride ion will have a totally different effect. It is a well-known truism of chemistry that an ion of fluoride (or of any element) is uniformly identical, regardless of source. In this connection I quote from A. P. Black, head of the department of chemistry, University of Florida, Gainesville: "There are no physical or chemical differences of any kind between fluorides naturally present in the water and fluorides being added in any forms presently being used in this country * * * these ions are identical, and it is not logical to suppose that the same ions in water would produce different effects, depending whether they were naturally present or have been added * * *. The effects of natural fluorides and added fluorides in reducing dental caries are identical for the same concentration. This has been conclusively shown by comparison of the Grand Rapids and Newburgh data with data from the same age groups at Aurora, Ill., where fluorides are naturally present. The same conclusions have been reached in numerous other studies conducted throughout the country."

The overwhelming weight of evidence leads us to but one conclusion: that there is not a shred of scientific evidence that sodium fluoride in drinking water

at the recommended concentration of one part per million (1/10,000 of 1 percent) has any harmful effect upon the health of the people.

The fluoridation of water has been attacked by some groups on various grounds ranging literally from the ridiculous (e. g., a Communist plot to poison the populace) to the sublime (e. g., "medication" of water may be incompatible with religious beliefs). Some of the opponents are sincere, some merely publicity seekers. In any case, however, every attempt has been made by men of authority and stature in the field of science to answer satisfactorily any objections raised, however remote they might be. It is only for this reason that such reputable and authoritative groups such as the United States Public Health Service, the American Dental Association, the American Medical Association, the National Research Council, the American Public Health Association, the State and Territorial Health Officers Association, the American Association of Public Health Dentists, the American Water Works Association, plus hundreds of State and community health and civic groups and university departments have all gone on record as officially endorsing favorable policies on fluoridation. It seems fairly obvious that not a single one of these groups, no less all of them, would have taken a stand on such an issue without first investigating thoroughly and find no reasonable doubt as to its merits and safety.

As to the need for such a program of fluoridating water where feasible, the results of dental examinations on prospective draftees of World War II indicates in what deplorable condition the teeth of our Nation is at present. When we consider that 1 out of every 9 draftees didn't meet minimum dental requirements before they were lowered almost to the point of elimination entirely, and this condition in a nation which can boast of the quality of its dental service and standard of living, we begin to get a perspective on the subject. Add to that the statistical fact that indicates that dental defects are occuring at a rate six times faster than they are being repaired, and you begin to see in what direction we are heading. We simply must have some simple means, available to all and at insignificant cost, whereby this destructive disease, dental caries, can be at least partially held in check. This we know can be brought about by fluoridation in controlled manner of public water supplies, where a reduction in dental decay up to about 65 percent can be expected. Then, perhaps, in another generation, we can boast of a nation which has this condition under control. In this connection, defeat of the Wier bill (H. R. 2341) is imperative in the public interest.

Very truly yours,

FRANCIS LEHR, D. D. S.,
Chairman, Council on Fluoridation, New Jersey Dental Society.

STATE OF NEW JERSEY,
DEPARTMENT OF HEALTH,
Trenton, May 18, 1954.

Hon. CHARLES A. WOLVERTON,
House of Representatives, Washington, D. C.

MY DEAR MR. WOLVERTON: It has come to my attention that you are serving as chairman of the Interstate and Foreign Commerce Committee which is to hold hearings May 25, 26, and 27 on the Wier bill, designated as H. R. 2341. This bill introduced by Congressman Wier prohibits the treatment of any public water supply with any fluoride compound.

As chief of the Bureau of Dental Health, New Jersey State Department of Health, I wish to express my strong opposition to the enactment of this bill. A few of my reasons for this statement are as follows:

1. Coming from New Jersey yourself, Congressman, I am certain you know of the advantages in dental health to our children in Gloucester and Salem Counties. A 300-square-mile area in these counties contains fluorides at a concentration of 1 to 2.4 parts per million. By survey of the children in Woodstown, N. J., and other communities in this area, and in 26 nonfluoride areas in New Jersey, we have proven that dental decay rates are 60 to 65 percent less in the fluoride areas. I am enclosing technical reports which show the findings relating to the benefits of fluorides in drinking water in our own New Jersey. We are indeed fortunate in New Jersey to have such a fluoride area that we may compare statistically the DMF (decayed, missing, and filling) rates. These same benefits can be attested to by every practicing dentist in these fluoride areas of Woodbury, Pitman, Glassboro, Woodstown, etc.

2. We have on file resolutions favoring fluoridation by:
   (*a*) Each of the 12 component dental societies comprising the New Jersey State Dental Society.
   (*b*) Each of the 21 county medical societies.
   (*c*) The New Jersey State Dental Society.
   (*d*) The New Jersey State Medical Society.
   (*e*) The American Dental Association.
   (*f*) The American Medical Association.
   (*g*) The New Jersey State Department of Health.
   (*h*) The United States Public Health Service.
   (*i*) Many others such as National Parent-Teachers Association, American Legion, etc.

3. Twenty-six communities in New Jersey are now fluoridating their water supplies.

4. In the last November election, Perth Amboy placed this question before the voters, and the vote was 3 to 1 in favor of fluoridation. Perth Amboy comprised the 26th community to initiate fluoridation.

5. Atlantic City has endorsed fluoridation, moneys are in the budget for this item and we are expecting this health resort to start fluoridating its water supply in a month or two.

6. A permit has been granted Freehold, N. J.

Research studies have led to the endorsement of fluoridation by the American Dental Association, official spokesman for more than 70,000 dentists. The American Medical Association also has adopted a statement on the desirability and safety of fluoridation. In fact hundreds of National, State, and community health and civic groups have adopted favorable policies on fluoridation. In New Jersey this pattern has not changed. This preventive public health measure must not be contravened—thereby denying our children, and posterity in general, the benefits of fluoride in drinking water. Corrective services alone cannot meet the ever-present high rate of dental decay and the mounting accumulation of dental defects. A wider use of preventive measures, such as fluoridation, is the most realistic and economic approach. Fluoridation is safe and effective.

Years of study and research are required before a health measure, such as fluoridation, can be recommended with safety. The dental benefits of fluoridation have been thoroughly explored. In addition, studies have been conducted among people who have lived continuously in areas where drinking water naturally contains high concentrations of fluorides. The research work has been painstaking, yet no scientist has been able to find any harmful effects from fluorides in the amount recommended for protection against dental decay.

With all the evidence favoring the fluoridation of public water supplies, may I urgently request of you, Congressman Wolverton, to assist all future generations of New Jersey citizens to enjoy the same protection against dental decay as is naturally available to Gloucester and Salem County residents.

I urgently ask your assistance in defeating bill H. R. 2341.

Sincerely yours,

EARL G. LUDLAM, D. D. S., M. P. H.,
Chief, Bureau of Dental Health.

THE FLOURINATION OF COMMUNAL WATER SUPPLIES

By J. M. WISAN, D. D. S., *Chief, Division of Dental Health, New Jersey State Department of Health*

Presented before New Jersey Section, American Water Works Association, and South Jersey Water Superintendents, Atlantic City, N. J., November 7, 1947.

The division of dental health of the New Jersey State Department of Health has recently completed a study comparing dental conditions among New Jersey children in 1946–47 with conditions found in 1933–34. The findings indicated that dental caries among children appears to be on the increase in New Jersey. Almost twice as many fillings were inserted for children of school age in 1946–47, than had been placed in 1933-34. (1) In spite of the fact that New Jersey dentists are performing more denistry for children, no gains have been made because of the increasing dental caries rate. Stating it in other words, parents are spending more for dental care without appreciably reducing the rate of dental decay among children. Preventive measures are required—procedures which will lower the basic caries rate substantially.

Since fluorination of communal water supplies has been so frequently mentioned as a means of preventing dental decay, a résumé of the investigations of the relation of fluorides to teeth should be of interest. The earliest reference to the mottling of teeth appeared in a short communication to the Dental Cosmos in 1902 from Napls, Italy. In 1908, the Colorado Dental Society undertook an investigation of what was then known as "Colorado brown stain" of the teeth. It was generally recognized in Colorado Springs that this condition occurred only in children and young adults who had been living there during the period of tooth calcification (first 8 years of life). Parents who had emigrated there from the eastern section of this country did not show any sign of fluorosis, nor did children from other nearby areas in Colorado show mottled enamel. The only conceivable difference between Colorado Springs and the nearest immune community was the source of the water supply—the communities having the children with mottled teeth enamel received their water supply from the Pike's Peak watershed, while the communities whose children had "normal" teeth received thir supply from a totally different source.

DENTAL FLUOROSIS

A paper describing mottled enamel was published in 1916 (2)—the term "mottled enamel" being used to designate the faulty structure of enamel caused by an excess of fluorine. In professional circles the term "dental fluorosis" is now frequently used to designate this defect.

Reports from Italy, Holland, Argentina and South Africa established beyond a doubt that the cause of the mottling of the enamel was in the domestic water supply. Similar findings were reported from this country. Perhaps the most interesting to a group of waterworks engineers is the following report by a dentist intimately connected with these studies. (3)

OAKLEY EXPERIENCE

In the town of Oakley, Idaho, the occurrence of mottled enamel was traced to the installation of the existing water supply. Several years before the investigation, water from a warm spring in the hills was piped into the town to supplant the individual shallow wells. The teeth of the children living in adjacent ranches, beyond the town's warm spring supply, were free from mottling. When the townspeople were apprised of the situation, they raised funds to change the water supply. Children living in a neighboring ranch, which used as its supply water from a nearby cold spring, had been found to have teeth without the brown stains. On this slender evidence, the cold-spring water was turned into the pipes a few weeks later. This was the first time that a municipal enterprise of such magnitude was undertaken for the sole purpose of correcting a dental disease. When the children of Oakley were examined eight years later, enough new teeth had erupted to show that mottling was no longer occurring.

The water supplies of these areas of mottled enamel occurrence were analyzed many times but nothing out of the ordinary could be found. In 1931, the first chemical evidence of the presence of fluorides in the water supply was announced. (4) The studies were performed by the Aluminum Company of America on water from the company-owned town of Bauxite, Ark., where mottled enamel has occurred. It is interesting to note that the first two analyses were rejected because of the reporting of the presence of fluorine in the water sample. When the third analysis showed the same result, the analyses were accepted.

At the same time, even more definite conclusions were reached by workers at the University of Arizona, who produced definite dental fluorosis in experimental animals by feeding and injecting fluorides. (5)

The former warm spring at Oakley was found to contain eight parts per million of fluorine and the "new" water had none. The deep well water at Bauxite had 13-14 parts per million of fluorine. The Pike's Peak watershed is known to have extensive deposits of cryolite, a fluoride material.

FIND AGENT—ELIMINATE IT

This story of fluorine and teeth which we have presented to you has been one of finding the agent which disfigured the teeth and then of eliminating it. The mottling produced by fluorides oftentimes makes the teeth pitted and notched. Under these conditions, it was thought that these teeth should be more readily attacked by caries. The opposite was found to be true. In 1929, a report was published indicating that mottled enamel was actually less liable to decay. (6)

UNITED STATES PUBLIC HEALTH STUDIES

Extensive studies were conducted in the late 1930's by the United States Public Health Service on the epidemiology of dental fluorosis. From these studies, it was found that in fluorine-rich areas there was relative freedom from dental caries in deciduous teeth as well as permanent teeth of the children with a continuous exposure to the domestic water supply. Furthermore, this occurred whether or not their teeth showed gross evidence of mottled enamel. (7)

The next step then was to determine just how much fluorine in the water supply would be necessary to reduce dental caries and yet not be the cause of mottled enamel. The United States Public Health Service found that the optimal concentration was about one part per million.

Children using domestic waters containing at least 1.0 parts per million fluorine experienced only about a third as much dental caries as comparable groups using water that contained no fluorine. (8)

NEW JERSEY DENTAL SURVEYS

When the staff of the dental division of the State Department of Health learned that 6 communities in New Jersey had had for 18 years water supplies which contained 1-2 parts per million of fluorine, dental surveys were performed to determine the caries rate among the children residing in those areas. It was found that children who had had the use of fluorinated water since birth have a lower dental caries rate than children from othe areas in the State. For example, 12-year-old children in the so-called fluorine areas had, on the average, only 3.2 DMF[1] teeth per child, compared to 5.4 DMF teeth per child in 12-year-olds in other areas in the State. Similarly, other children's age groups studied in fluorine areas above the 7-year level showed fewer DMF teeth. (9)

FLUORIDES RESPONSIBLE FOR LOWER CARIES RATE

Meanwhile, other findings indicated that fluorides were alone responsible for a lower caries rate. Decayed teeth showed a lower fluoride content than did nondecayed teeth from the very same mouth (10). Teeth shaken in fluoride solutions were less soluble in mineral acids than were teeth not so treated (11). Topical applications of a 2-percent sodium fluoride solution to the teeth of children showed a 20–40-percent reduction in new dental caries (12). All of these reports added what seemed to be convincing evidence of the importance of this newly found caries-inhibitory agent.

One more link in the chain of evidence remained to be forged: Would the addition of 1 part per million of fluorine to an erstwhile fluorine-free public water supply also reduce dental caries? At least seven controlled studies are at present being conducted to answer this final question (13). Recently the New York State Department of Health published a preliminary report of their 2-year experience of adding 1 part per million fluorine to the Newburgh water supply. Encouraging indeed is the observation that there has occurred a decrease in the susceptibility of this city's children to tooth decay. No toxic effects have been discovered from the minute amounts of fluorine added to the water (14).

RESULTS OF FLUORINATED SUPPLY

It has been estimated that a fluorinated water supply will produce the following results, compared to nonfluorinated water:

1. Six times as many children having no dental caries experience.
2. Sixty percent lower dental caries experience rate.
3. Seventy-five-percent decrease in the first permanent molar loss (15).
4. Ninety-percent reduction in tooth-surface caries in upper anterior teeth (16).

The situation then appears to be thus: A concentration of about 1 part per million naturally borne fluorine in the public water supply has reduced the incidence of decay in the teeth of children who have been reared in the area. Beyond 1.5–2 parts per million fluorine, mottled enamel may occur. The optimal concentration appears to be about 1 part per million, which will reduce the incidence of new caries and not produce mottled enamel. Investigations are proceeding to determine the advisability of fluorinating the public water supply. Results will be reported in a few years.

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[1] DMF teeth—permanent teeth showing evidence of dental caries experience (permanent teeth requiring filling—permant teeth extracted—permanent teeth requiring extractions—filled permanent teeth).

EXPERIMENTAL PROGRAMS

Meanwhile, interested communities have been inquiring about the possibilities of fluorinating a domestic water supply in New Jersey. What attitudes should we as representatives of the State department of health and you as members of the New Jersey section of the American Water Works Association assume? Certainly we should not be justified in recommending widespread addition of fluorine to the communal water supplies in our State. We should, however, be prepared to set up 1 or 2 experimental programs, adding 1 part per million fluorine to the water supply in 1 or 2 selected communities for the following reasons:

1. The yearly cost is relatively low—9 cents per capita (17).

2. The evidence indicates that the dental-caries rate is lower among children reared in a community with a communal water supply having 1 part per million fluorine.

3. No injurious concomitants have been revealed from the addition of 1 part per million fluorine to communal water supply.

4. It would be advantageous to citizens of New Jersey if a demonstration study were made. Not only would we be more certain of the results of adding fluorine to a water supply but also information about the installation and maintenance would be more readily available to New Jersey authorities.

It would seem to be appropriate, therefore, for your organization to collaborate with the State department of health and the New Jersey State Dental Society in the proposed investigation in order to consider subsequent action on this matter with convincing authority.

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Fluorine Content of the Water Supplies of New Jersey

(By John E. Bacon, Chief, Bureau of Chemistry, New Jersey State Department of Health)

[Presented before New Jersey section, American Water Works Association, and South Jersey Water Superintendents, Atlantic City, N. J., Nov. 7, 1947]

Sometime before 1935 the publications of many investigators (1, 2, 3) established conclusive proof that the causative agent for the production of mottling of teeth in some communities was excessive fluorine in the drinking water supply. The examination of the public water supplies of New Jersey for the fluorine content was begun in 1935, when 40 percent were examined. Only four exceeded the safety limit accepted at that time, of 1.0 p. p. m. of fluorine. These cities were: Glassboro, 1.6 p. p. m. F; Mullica Hill, 1.6 p. p. m. F; Woodbury, 1.4 p. p. m. F; Blackwood, 1.1 p. p. m. F, all in south Jersey.

At the end of 1935, the picture of the public water supplies of New Jersey was as follows:

107=Total number of supplies examined.
19 percent of supplies had F content of 0 to 0.10 p. p. m.
38 percent of supplies had F content of 0.15 to 0.25 p. p. m.
32 percent of supplies had F content of 0.30 to 0.50 p. p. m.
7 percent of supplies had F content of 0.60 to 1.00 p. p. m.
4 percent had F content greater than 1.00 p. p. m.

A dental survey of the teeth of the schoolchildren of Woodbury was promptly undertaken by our district health officer from the Pitman area. Very slight evidence of mottling of the enamel of the teeth was found.

The conclusion was reached, "There was no evidence of endemic fluorosis in New Jersey." In fact, the New Jersey State Department of Health felt quite pleased with the low fluoride content of the public water supplies of the State, as you will recall at that time fluorine in drinking water was considered deleterious.

All Public Water Supplies With High F Located in South Jersey

Mention has been made that in 1935 four public water supplies, all in south Jersey, were found to contain fluorine in amounts exceeding that accepted by health officials at that time, but all other supplies in the State were within the so-called safety limit. Fluorine examinations were subsequently made of public water supplies in areas contiguous to those where high fluorine values had been found, and the water supplies in four additional cities were found to exceed 1.0 p. p. m. F, namely:

Clarksboro, 1.1 p. p. m.; Mantua, 1.3 p. p. m.; Wenonah, 1.3 p. p. m.; Woodstown, 1.8 and 2.4 p. p. m.

If you refer to a map of New Jersey it will be seen that all these public water supplies are in communities grouped within an area having a 15-mile radius around the town of Glassboro, in southwestern New Jersey. Excepting Woodstown, in Salem County, all the communities are located in Gloucester County, a roughly rectangular area some 10 miles wide and 30 miles long, extending from the Delaware River on the west to about the middle of the State to the east, where it adjoins Atlantic County. To the north it is bounded by Camden County, and on the south largely by Salem County. The towns have artesian well supplies 500–700 feet deep. On the other hand, many examinations of the water from shallow wells within this area showed the fluorine content to be of the magnitude of 0.2 p. p. m. F.

Why is the fluorine content of water from deep artesian wells in this small area in New Jersey so much higher than in other parts of the State? Some theories have been advanced, not too convincing.

FLUORINE IN WATER SUPPLIES CLAIMED TO REDUCE DENTAL CARIES

Around 1940 the public health concept of the deleterious action of fluorine in drinking water began to change, as the investigations of many (4, 5) supported the theory that small amounts of fluorine, not exceeding 1 to 1.5 p. p. m., was very beneficial; decay of the teeth was inhibited, yet mottling of the enamel of the teeth was not produced by such amounts. The new drinking water standards of the United States Public Health Service, adopted in 1946, permit fluorine to be present to the extent of 1.5 p. p. m. in water supplies used on interstate carriers. This is an increase of 0.5 p. p. m. fluorine over the previous standard. This action presumably was taken following the changed public health view as to the beneficial action of small amounts of fluorine in combating dental caries.

FLUORINE CONTENT OF NEW JERSEY WATER IN 1945

In 1945 the fluorine content of approximately 80 percent of our public water supplies and many surface waters were determined. The work was undertaken to bring our information up to date and to supply the many requests received from health officials and the public for information as to the fluorine content in the public potable water supplies in New Jersey. Such requests were probably induced by the publicity given dental health programs regarding the effect of fluorides on dental caries, and to litigation that arose in southern New Jersey as a result of the release of fluorine fumes by certain manufacturing establishments located in this general area.

PUBLIC WATER SUPPLIES

In New Jersey 95 percent of the population of 4,160,165 (1940 census) are served by 270 public water supplies. A tabulation of the fluorine results obtained in the 1945–46 examinations shows:

227=Total number of supplies examined.
42 percent of supplies with F content of 0 to 0.10 p. p. m.
47 percent of supplies with F content of 0.15 to 0.25 p. p. m.
7 percent of supplies with F content of 0.30 to 0.50 p. p. m.
1 percent of supplies with F content of 0.60 to 1.00 p. p. m.
3 percent of supplies with F content greater than 1.00 p. p. m.

An appreciable number of the streams, lakes, and surface waters of the State were also examined, with the following results:

83=Total number of samples examined.
17 percent of samples had F content of 0 to 0.10 p. p. m.
70 percent of samples had F content of 0.15 to 0.25 p. p. m.
7 percent of samples had F content of 0.30 to 0.50 p. p. m.
5 percent of samples had F content of 0.60 to 1.00 p. p. m.
1 percent of samples had F content greater than 1.00 p. p. m.

CHIEF ENGINEER'S CONCLUSIONS

The following conclusions were drawn from these fluorine examinations by Chief Engineer Croft of the bureau of engineering and sanitation in the annual report of the New Jersey State Department of Health for the fiscal year ending June 30, 1946.

1. The fluorine content of the surface waters in New Jersey did not exceed the standard set by the United States Public Health Service in any instance.

2. Three public water supplies, all in southern New Jersey, exceeded the standard set by the United States Public Health Service in the matter of fluorine content.

3. 99 percent of the public water supplies surveyed in New Jersey during the current fiscal year delivered a water to consumers containing fluorine in quantities less than the maximum limit set by the United States Public Health Service.

EXAMINATION OF PUBLIC WATER SUPPLIES IN 1946

At the end of the last fiscal year all the public water supplies in New Jersey had been examined for the fluorine content and the pattern closely resembled that for the preceding year 1945–46. 222=Total number of supplies examined.
61 percent of supplies had F content of 0 to 0.10 ppm.

34 percent of supplies had F content of 0.15 to 0.25 ppm.
2 percent of supplies had F content of 0.30 to 0.50 ppm.
0.5 per cent of supplies had F content of 0.60 to 1.00 ppm.
2.5 percent of supplies had F content greater than 1.00 ppm.

ADDITION OF FLUORINE TO PUBLIC WATER SUPPLIES

A quick glance at these tabulations shows that 92 percent of the 449 public water supplies examined have a fluorine content of 0.25 ppm. or less, yet the beneficial effect of fluorine in the range of 1.0 to 1.5 ppm. in drinking waters in combating dental caries has much support from public health officials. Many are insisting that where water supplies do not contain sufficient fluorine to be effective in reducing dental caries, that the public be given the added amounts needed by introduction of fluorides into the public water supplies. Many of you may remember the arguments and reasons advanced years ago in connection with the cry for fortification of public water supplies with iodides to prevent thyroid conditions. The final result—iodized salt.

NEWBURGH EXPERIMENT

The department is watching with great interest in the long-range experiment being conducted in the city of Newburgh, N. Y. Here fluorides are being added to the public water supply to bring the amount to 1.00 ppm. Dental surveys of schoolchildren have and will continue to be conducted. Comparisons will be made with like surveys undertaken upon the schoolchildren of the nearby city of Kingston, where the fluorine content of the drinking water is low and approximates the amount in Newburgh before fortification. The preliminary results are very promising, indicating that added fluorine does reduce dental caries. However, long-range scientific investigations are in progress in the following cities:

Brantford, Ontario; Evanston, Ill.; Grand Rapids, Mich.; Marshall, Tex.; Midland, Mich.; Ottawa, Kans.; Sheboygan, Wis.; Madison, Wis.

The results must be evaluated before conclusions are reached that public water supplies should be treated with fluorides as a routine procedure. Furthermore, if the consensus of sanitarians is that additional amounts of fluorine to the water supply do combat and reduce dental caries, then the best method of getting same to the people, whether via the public water supply or some other less wasteful procedure, will eventually be determined by the crystallization of the opinions of many. Waterworks officials will play an important part in the final decision as it affects individual communities. In all discussions that portion of the public, small in New Jersey but sizable in some States, not served by public water systems must be considered. The United States Public Health Service considers the high rate of dental caries in New Jersey one of our foremost health problems.

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Dental Caries and Fluorine-Water

(By J. M. Wisan, D. D. S., M. S. P. H., chief, dental health bureau, State Department of health)

As a result of many fluorine studies interest has mounted in the possibilities of reducing the prevalence and incidence of dental decay by the use of fluorine compounds.

When it was revealed[1] that six communities[2] in New Jersey had public water supplies with fluorine content between 1 and 2.4 parts per million, the bureau of dental health immediately began a preliminary study. The purpose of the study was to compare dental conditions among the school children of these "fluorine" communities with dental conditions found among children where the public water supply contained relatively little or no fluorine.[3]

As Hill[4] points out, to study problems of clinical trial one must have (1) two groups similar in all respects except the form of treatment, (2) a criterion for determining conditions among the two groups, and (3) sufficiently large number of individuals to give reliable results.

To meet the first requirement, children of 26 communities with no fluorine in public water supply were surveyed. No selection was made except that only children in suburban and rural counties were included. This precaution was taken because none of the fluorine communities could be considered urban. The data were collected by specific ages. Because in both situations males and females were in the same proportion no attempt was made to analyze data according to sex. The examinations—mouth mirror and explorer—were conducted in both situations with similar techniques and directions.

Two criteria were used for determining dental conditions among the two groups:

(*a*) DMF rate per child by specific ages;

(*b*) Percentage of children with no DMF teeth by specific ages.

For the reader unfamiliar with the term DMF, the following explanation is given. DMF is a term which includes four dental categories: (1) Permanent teeth decayed requiring filling D; (2) teeth decayed now requiring extraction; (3) teeth missing because of previous extraction—both (2) and (3) are included as M teeth; (4) teeth previously filled (now in sound condition) F. If one analyzes these 4 categories which make up the total of DMF teeth, one will note that the sum of all DMF teeth in individuals under 20 will give an accurate estimate of all teeth that are or were subject to decay.

Thus the first criterion mentioned above—DMF rate per child—actually gives one the number per child of teeth that experienced decay, while the second criterion—percentage of children with no DMF teeth—would show the percentage of children who had had no decayed teeth.

To assure sufficiently large numbers in our studies we included all communities of suburban and rural character where dental inspections had been conducted by specific ages and where data were obtained with the same techniques as used in fluorine areas.

Another precaution was taken in the "fluorine" areas. Children were divided into two groups—those who lived in communities before and after the fourth birthday and those who moved into the communities after the fourth birthday. When an attempt was made to further subdivide the children who lived in the community before the second birthday it was found with very few exceptions that children, whom we had classified as living there before and after the fourth birthday, lived there before the second birthday as well.

FINDINGS

Table I shows DMF rate of public-school children in 26 New Jersey communities where no fluorine (or too little fluorine) was found in public water supply.

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[1] The department is indebted to Dr. Jack S. Hyman for his cooperation in this study.

[2] Communities included in this survey were: Blackwood, Glassboro, Mantua, Mullica Hill, Wenonah, and Woodstown.

[3] The hypothesis is that fluoride of 1 to 2 parts per million in the public water supply will lower the prevalence of dental caries without causing fluorosis (mottled enamel).

[4] Principles of Medical Statistics, A. Bradford Hill, vol. III, 2d edition, The Lancet, London, 1939, p. 172.

TABLE I.—*DMF rate: Public-school children in 26 New Jersey "nonfluorine" communities 1944—Mouth mirror and explorer examination in schoolroom*

Age (last birthday)	Number examined	DMF per child	Age (last birthday)	Number examined	DMF per child
6	488	0.64	12	611	5.4
7	599	1.5	13	566	6.5
8	608	2.4	14	490	8.3
9	566	3.0	15	376	9.4
10	561	3.6	16	320	10.8
11	572	4.3	17	365	11.9

TABLE II.—*DMF rate of public-school children who lived before and after the 4th birthday in fluorine communities*

Age (last birthday)	Number examined	DMF per child	Age (last birthday)	Number examined	DMF per child
6	111	0.4	12	90	3.2
7	112	.9	13	100	4.3
8	121	1.4	14	92	4.5
9	94	1.6	15	58	4.4
10	88	2.1	16	36	4.2
11	101	3.1			

TABLE III.—*DMF rate of children moving in fluorine communities after 4th birthday*

Age (last birthday)	Number examined	DMF per child	Age (last birthday)	Number examined	DMF per child
6	12	0.08	12	56	5.7
7	28	2.1	13	47	6.7
8	32	1.8	14	36	6.5
9	43	2.9	15	33	7.2
10	35	2.9	16	19	6.2
11	41	4.1			

Table IV compares the two groups in fluorine communities with the group in nonfluorine areas.

TABLE IV.—*DMF per child by ages*

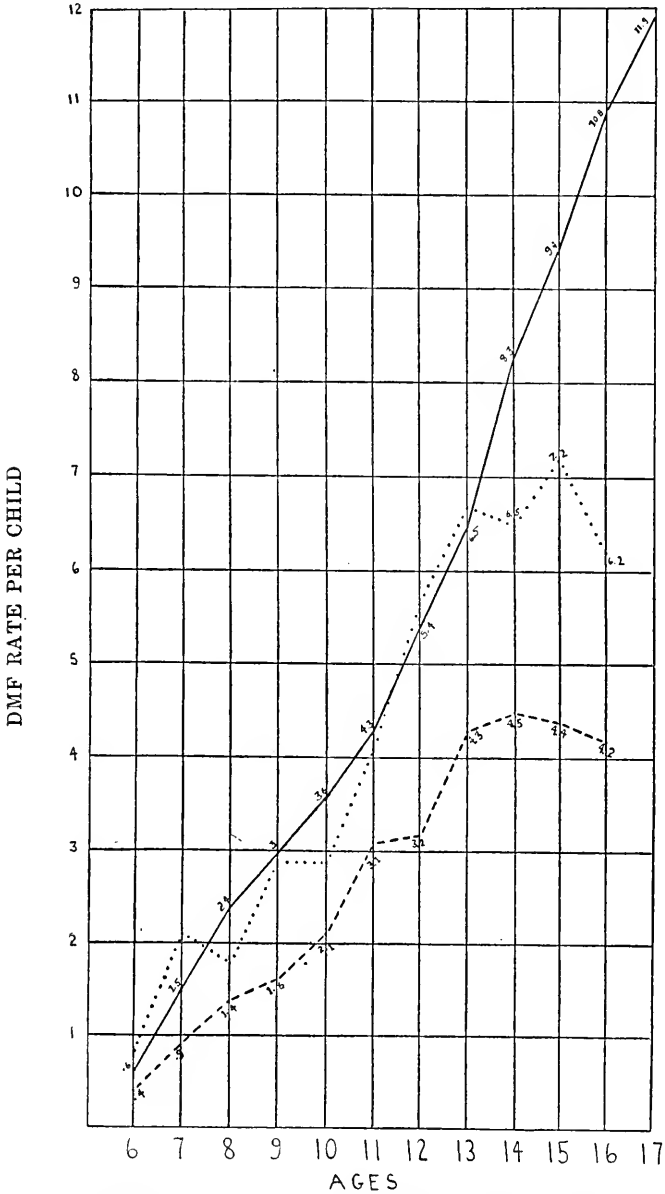
Age	26 New Jersey communities nonfluorine	Moved in community after 4th birthday	Lived in fluorine community before and after 4th birthday	Age	26 New Jersey communities nonfluorine	Moved in community after 4th birthday	Lived in fluorine community before and after 4th birthday
6	0.64	0.08	0.4	12	5.40	5.70	3.2
7	1.50	2.10	.9	13	6.50	6.70	4.3
8	2.40	1.80	1.4	14	8.30	6.50	4.5
9	3.00	2.90	1.6	15	9.40	7.20	4.4
10	3.60	2.90	2.1	16	10.80	6.20	4.2
11	4.30	4.10	3.1				

Illustration I presents graph of data in tables I, II, and III.

Illustration 1

COMPARISON OF DMF RATE

N. J. COMMUNITIES—HIGH AND LOW FLUORINE CONTENT WATER



———— DMF—26 New Jersey Communities—Low Fluorine

- - - - - - - - - - DMF—Children moving into high fluorine community after fourth birthday

— — — — — — — — DMF—Children having lived before and after fourth birthday fluorine community.

TABLE V.—*Data to show difference in number and percentage of children having no DMF teeth in fluorine and nonfluorine areas*

Age (last birthday)	Number examined		Number with no DMF teeth		Percentage with no DMF teeth	
	Non-fluorine areas	Fluorine areas	Non-fluorine areas	Fluorine areas	Non-fluorine areas	Fluorine areas
6	437	96	299	66	69	68
7	440	101	167	55	37	54
8	474	117	108	55	23	47
9	570	94	168	37	29	39
10	598	92	31	28	6	30
11	534	110	25	31	5	28
12	512	89	27	20	5	22
13	569	100	20	17	4	17
14	486	93	14	16	3	17
15	546	59	12	8	2	14
16	518	38	19	6	3	16
17	341	17	7	3	2	18

THE UNIVERSITY OF PITTSBURGH,
Pittsburgh, Pa., May 17, 1954.

Hon. CHARLES A. WOLVERTON,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D. C.

DEAR MR. WOLVERTON: I am presuming upon my acquaintance with you when I was Surgeon General of the United States Public Health Service to write to you in opposition to H. R. 2341. In my opinion this bill would not protect the public health, quite to the contrary.

It was during the time that I was Surgeon General that studies were made by the United States Public Health Service of the relationship between fluoridation of water and dental caries. I shall not attempt to give you a summary of the research findings since I am sure they will be presented in detail to your committee. Suffice it to say that I have continued to follow the literature regarding fluoridation of water supplies. It is my considered judgment that the addition to municipal water supplies of fluorine in the amounts recommended has a demonstrated value in reducing the amount of dental caries in the population served and that there is no valid evidence that fluorine in the amounts recommended has any deleterious effects whatever upon the public health.

During the past several years I have served as a member of the national Commission on Chronic Illness and as a member of its executive committee. This commission was asked more than a year ago to make a statement concerning the effects, if any, of fluoridation of community water supplies upon the aged and chronically ill. We appointed a special committee under the chairmanship of Dr. Kenneth F. Maxcy, professor of epidemiology, Johns Hopkins University School of Hygiene and Public Health. The other members were Dr. Edward J. Stieglitz, outstanding geriatrician of Washington, D. C., and Dr. Nathan Shock, Chief of the Section on Gerontology, National Institutes of Health, Public Health Service. This committee in March 1954 submitted a report to the Commission on Chronic Illness a copy of which is attached. After considering this report the commission accepted it and recommended "American communities to adopt this public health measure (fluoridation) as a progressive step in the prevention of dental caries."

I hope that my statement will be made a part of the record of your committee.

With personal regards, I am

Sincerely,

THOMAS PARRAN, M. D., *Dean*

CHRONIC ILLNESS NEWS LETTER

Issued monthly by the Commission on Chronic Illness—an independent national agency founded by the American Hospital Association, American Medical Association, American Public Health Association, and the American Public Welfare Association, for the purpose of studying problems of chronic disease, illness, and disability.

Fluoridation of Water Supplies Endorsed by Commission at Annual Meeting

The statement below on the effects of fluoridation of community water supplies upon the aged and chronically ill was adopted by the Commission on Chronic Illness at its fifth annual meeting in Chicago on March 18

Prevention of the occurrence of disease—or prevention of its progress—is generally accepted as the most desirable solution to the growing problem of chronic illness in this country. The Commission on Chronic Illness is interested in furthering the adoption and use of any public health measures that will contribute to the prevention of chronic illness.

Fluoridation of community water supplies has been undertaken by many communities as the public-health measure directed toward the prevention of dental caries. Fluoridation of public water supplies has been endorsed by leading professional organizations in the field. Dental caries is an important chronic disease—important in terms of widespread prevalence and destruction of useful tissue—also important in the way that resulting loss of teeth may complicate the life of aged persons and persons suffering other disabling conditions.

The major portion of scientific opinion is that fluoridation of water supplies for the prevention of dental caries presents no hazard to public health.[1] A minority view is held by a number of qualified scientists who believe that the safety of this procedure has not been sufficiently demonstrated. Cognizant of the fact that fluoride compounds in large doses are poisonous, they advance the hypothesis that the small amounts contained in fluoridated water consumed over many years may by cumulation have subtle physiological effects especially detrimental to the aged and the chronically ill.

The commission, concerned with the problems of chronic illness, did not feel that it could recommend fluoridation of public-water supplies without first taking cognizance of the possibility of detrimental effects. At the request of the board of directors of the commission, a committee of distinguished scientists reviewed and evaluated the available evidence to decide whether at this time a positive position could be taken with regard to this hypothetical danger. The committee was under the chairmanship of Dr. Kenneth F. Maxcy, professor of epidemiology, Johns Hopkins University School of Hygiene and Public Health, Baltimore. The other members were Dr. Edward J. Stieglitz, outstanding geriatrician of Washington, D. C., and Dr. Nathan Shock, Chief of the Section on Gerontology, National Institutes of Health, Public Health Service. This committee reports as follows:

"The basic facts concerning fluoridation which have been established by the investigations of the past 20 years have been briefly set forth in the report of the Ad Hoc Committee on Fluoridation of the National Research Council.[2] Under normal conditions of living, fluorine is a trace element in human nutrition. Although minute amounts are present in certain foods and beverages, a variable and important source is drinking water. Public water supplies vary widely in the amount of fluoride naturally present. Children dependent upon supplies that are low in fluorides have a high dental caries attack rate as compared to children living in communities having water supplies containing about 1 part per million or more of fluoride. The advantage to the latter group is considerable: the incidence of carries is reduced by one-half to two-thirds. The caries preventive effect of adequate fluoride intake is principally conferred upon children up to the 12th year of life, during the period when dentine and enamel of permanent dentition are being formed. However, increased resistance to dental caries is carried over into later life to an appreciable degree.

"When the trace quantities in drinking water required for optimal dental health are exceeded, undesirable physiological effects may be induced. The most sensitive indication of the latter is interference with normal calcification of the teeth, which is manifested in mottled enamel. This effect, although compatible with caries-resistant tooth structure, is esthetically undesirable. The level of fluoride concentration in drinking water which is associated with the appearance of mottled enamel varies with individual susceptibility and the amount of water consumed. Under the climatological conditions of the north-

[1] The Fluoridation of Domestic Water Supplies in North America as a Means of Controlling Dental Caries. A report of the United Kingdom Mission, Ministry of Health, Department of Health for Scotland, 1953.

[2] National Research Council Viewpoint on Fluoridation. Journal American Waterworks Association, vol. 44, No. 1, January 1952.

ern part of the country it is reached when the fluoride content of domestic water supplies exceeds 1.5 p. p. m.

"In view of these facts, Trendley Dean[3] and his associates developed the hypothesis that by adding fluorides in proper amounts to water supplies which were deficient or low in this element it was possible to afford optimum caries preventive effect without causing mottled enamel. Controlled studies were begun in 1945 to test this hypothesis in Grand Rapids, Mich.; Muskegon, Mich.; Aurora, Ill.:[4] and in Newburgh and Kingston, N. Y.[5] Results now available from these studies are such as to definitely establish that the protection against caries given by naturally occurring fluorides is also conferred by water to which this element has been added. Careful annual medical examinations of children in the latter study including X-rays, urine analysis, and other laboratory tests over a 6-year period have failed to uncover any adverse effect from fluoridated drinking water. The children in Newburgh drinking fluoridated water showed no significant deviation in height or weight growth from those in Kingston where the water was essentially fluoride free.

"The question posed by the minority of scientists is whether fluoride added to drinking water in quantities insufficient to cause mottled enamel (i. e., to a level of approximately 1 part per million) have, by cumulation in tissues, any physiological effects which may be detrimental to adults and to the chronically ill. Information bearing upon this question has been derived from two sources: (1) Studies on the metabolism of fluorides in man and in experimental animals; (2) observations on human populations exposed to water supplies having a fluoride content in excess of 1.5 parts per million.

"The extensive literature dealing with metabolism and toxicology of fluoride compounds has been reviewed by the National Institute of Dental Research, United States Public Health Service[6] and in an article by F. F. Heyroth in the Journal of the American Public Health Association.[7] In our judgment there has been a sufficient number of observations on human subjects, with support of animal experiments, to establish the pattern of metabolism. Up to a daily intake of 4 or 5 milligrams or more fluorides absorbed are almost completely eliminated in the urine and sweat. (To get 5 milligrams of fluoride daily one would have to drink about 5 quarts of water containing 1 part per million of fluoride every day.) Any residual is stored in the skeletal system, teeth and bones. Little, if any, remains in the soft tissues, liver, spleen, kidneys, etc. As the level of intake is lowered, stored fluorides tend to be partially eliminated. At high levels of fluoride intake (8 parts per million or more) changes occur in bones which may become evident by X-ray (bone fluorosis). However, storage of fluorides in the skeletal structure in the amounts considered here results in no functional disadvantage. In other words, the body possesses two potent protective mechanisms: (1) rapid excretion in the urine; (2) storage in the skeleton.

"These studies of metabolism have been supplemented by a considerable number of observations on population groups naturally exposed for long periods of time to water supplies with varying fluoride content. In the United States, more than a million people, served by 453 different water supplies have, for generations used drinking water with a natural fluoride content from 1.5 to 8.0 parts per million. No definite evidence has been forthcoming that continued consumption of such water is in any way harmful to health. There have been no reports of evidence of changes in bone structure when the water supply contained less than 5 parts per million.

"In a radiologic survey of 114 persons who had lived for at least 15 years at Bartlett, Tex., where the water supply contained 8 parts per million, 12 percent of those examined showed minimal X-ray evidence of increased density of the bones but in no case was there any deformity or interference with function. Medical examinations, which included urinalysis and blood counts, revealed no indication that the residents of Bartlett were less healthy than those of nearby Cameron, where the water contained only 0.3 part per million. Reports of bone

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[3] Formerly Director, National Institute of Dental Research, National Institutes of Health.

[4] Effect of Fluoridated Public Water Supplies on Dental Caries Prevalence. Public Health Reports, by Francis A. Arnold, Jr., D. D. S., H. Trendley Dean, D. D. S., and John W. Knutson, D. D. S., Jr. P. H., vol. 68, p. 141, February 1953.

[5] Newburgh-Kingston Caries Fluorine Study V—Pediatric Aspects—Continuation Report, by Edward R. Schlesinger, M. D., David E. Overton, M. D., and Helen C. Chase, M. Sc., Journal American Public Health, vol. 43, p. 1011, August 1953.

[6] Unpublished memorandum. Copy in the files of Commission on Chronic Illness.

[7] Toxicological Evidence for the Safety of the Fluoridation of Public Water Supplies, by Francis F. Heyroth, M. D., Journal of American Public Health, vol. 42, p. 1568, December 1952.

fluorosis in studies conducted in Italy, India, South Africa, and Argentina indicate similar relationships to the use of high fluoride bearing waters.

"It is to be emphasized that the proponents of fluoridation of water recognize that excessive ingestion of fluorides is undesirable and that, where practical, they should either be removed by a treatment process or new sources of supply sought. They stress the necessity of keeping the fluoride content of drinking water below the level of that which causes mottled enamel, the most sensitive indication of an excess.

"On the hypothesis that a higher incidence of chronic disease would be reflected in higher mortality rates due to specific causes, the experience of cities with water supplies having a high fluoride content has been compared with that of cities having a low fluoride content. The most recent and comprehensive study [8] of such data is one compiled by the United States Public Health Service and based on the 1949–50 census reports. In this analysis of mortality rates, all cities in the United States with 10,000 population or over in 1950, whose drinking water contained 0.7 part per million or more of fluoride naturally present were considered for inclusion. Each fluoride city was paired with the average of the three closest fluoride-free cities (with less than 0.2 part per million fluoride with populations of 10,000 and over. Deaths from cancer, heart disease, and nephritis per 100,000 population, adjusted for age, sex, and race in 28 fluoride and in 60 nonfluoride cities failed to show significant differences.

"It is the contention of the minority that epidemiological studies or analysis of vital statistics cannot be relied upon to determine whether the condition of sick persons, such as those afflicted with chronic illness, particularly kidney ailments, would or would not be worsened by the ingestion of fluoridated water. Although the data are limited, experiments recently carried out at the National Institute of Dental Research on somewhat more than 50 cases who have evidence of damaged kidney function and who use drinking water containing 1 part per million of fluoride have come to our attention. The results indicate that the excretion pattern of fluorides in these patients with damaged kidneys is similar to that reported by McClure[9] for healthy young men. The collection of negative evidence such as this for an absolute determination of no possible effect of fluorides in persons suffering from chronic illnesses is an endless and extremely complicated undertaking. Generally speaking, consideration of the primary factors in the causation of such illnesses far overshadows any minor or secondary effects which, in the light of present knowledge, could be assumed from ingestion of trace amounts of fluoride in drinking water."

The commission has been advised by the foregoing expert opinion that extensive research into the toxicology of fluorine compounds has revealed no definite evidence that the continued consumption of drinking water containing fluorides at a level of about 1 part per million is in any way harmful to the health of adults or those suffering from chronic illness of any kind. While the evidence does not absolutely exclude this possibility, if a risk exists at all it is so minimal and inconspicuous that it has not been revealed in many years of investigation. The commission, therefore, urges American communities to adopt this public-health measure as a positive step in the prevention of the chronic disease, dental caries.

The fluoridation of water supplies involves no new experience in human welfare. Over 3 million people are living in ordinary good health on water naturally containing fluorides in the amounts recommended for caries control, or more.

The Role of Dentistry In Chronic Illness

[Reprinted by permission of Dental Health Highlights]

The American people are showing increasing concern over the complex problems of chronic illness—its prevention and the need of adequate care for persons who are chronically disabled. The dental profession shares this concern and is working closely with representatives of other health professions who likewise have a stake in human rehabilitation.

On March 18 to 20, a National Conference on Care of the Long-Term Patient was held in Chicago under the auspices of the commission on chronic illness. Some 400 representatives of 37 national health organizations and agencies learned that the overall—and almost overwhelming—problem of the care of the long-term patient is a problem of many segments, one of which is dental care.

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[8] Data in files of Commission on Chronic Illness.

[9] McClure, F. J., and Kinser, C. A., Fluoride Domestic Waters and Systemic Effects. Public Health Reports, vol. 59, p. 1575, 1944.

Dr. David W. Brock,, chairman of the council on dental health, is the American Dental Association's official representative on the commission, and he and other dentists participated in the discussions. Dr. Brock presented to the conference the newly prepared statement adopted by the council on dental health entitled, "The Role of Dentistry in Chronic Illness." The statement, which is scheduled for publication in the May issue of the Journal of the American Dental Association, has five salient points which are listed in the following text:

1. A concept frequently overlooked is that many dental diseases are or may become chronic. Among these conditions are dental caries, gingivitis, advanced periodontal disease, and malocclusion.

2. Many of the major chronic illnesses have direct implications in the field of dentistry. Among these illnesses are diabetes mellitus, cancer, epilepsy, cerebral palsy, cardiovascular diseases, arthritis, cleft palate, tuberculosis, and nutritional disorders.

3. A serious problem exists in getting dental care to the bedfast patient, and dental societies and community groups can do much to develop programs to meet this need.

4. Community dental-health programs that lead to the prevention and control of dental diseases lead also to the prevention and alleviation of chronic illness and disability.

5. Good dental care is an important factor in contributing to the overall health and rehbilitation of persons who are chronically ill.

The need for dental care of the long-term patient is not a subject for arbitrary consideration; it is a vital requirement in the rehabilitation of millions of persons. Therein lies the role of dentistry in chronic illness—as revealed by the facts that make up the council's statement.

"Model Welfare House" Opened

Morris County, N. J., has opened a new $1,151,750 "Model Welfare House" to house and provide care for its poor, chronically ill old men and women. Located near the top of Shonghum Mountain, the hospital is a 3-story, 138-bed structure, built in the shape of a Y.

There are direct entrances on the ground level to the admitting room, kitchen, dining, smoking, recreational and occupational therapy rooms, chapel, morgue, and laundry. The dining room with a seating capacity of 112, is a half circle with the exterior wall of glass. The recreation room seats 160 persons and is adjacent to a large terrace facing the southwest.

On the first floor are 48-bed wards for ambulatory men, two 8-bed and one 6-bed wards for ambulatory women, and three 2-bed rooms for men or women or couples. A nurse's station is located in the center of the rotunda to allow efficient control of administration of the wards.

Bed patients are cared for on the second floor. There are 32 hospital beds for men and 22 for women, in addition to two 4-bed wards and three 2-bed rooms for either men or women.

The top floor contains living quarters for the superintendent and 20 employees.

Readers desiring further information on the "Model Welfare House" are referred to the January issue of The Welfare Reporter, official publication of the New Jersey Department of Institutions and Agencies, 135 West Hanover Street, Trenton.

American Dental Association,
Chicago, Ill., *May 17, 1954.*

Hon. Charles A. Wolverton,
House of Representatives,
Washington, D. C.

Dear Congressman: For your information I am enclosing a copy of a special bulletin which is being distributed by the American Dental Association to its members. It relates to H. R. 2341.

As you know, this bill proposes that Federal legislation be enacted which would prevent the fluoridation of community water supplies throughout the entire Nation. Fluoridation of water supplies is now in operation in nearly 1,000 United States cities and towns including Washington, D. C. The residents of these cities and towns number nearly 17 million.

Fluoridation of water supplies has been demonstrated to be an effective, safe, and economical measure for the reduction of the incidence of tooth decay, particularly among children.

In view of the importance of this matter the American Dental Association is asking its members to advise the Members of Congress on the subject of fluoridation in general and H. R. 2341 in particular.

With all good wishes.

Very truly yours,

FRANCIS J. GARVEY,
Secretary, Council on Legislation.

INFORMATION BULLETIN

To Members of the Dental Profession:

The Wier bill, H. R. 2341, which is the subject of this issue of the ADA Information Bulletin, is a direct attack on the professional opinion of the overwhelming majority of dentists and physicians who have endorsed and recommended the fluoridation of community water supplies. Because of the importance of this health measure, it is requested that each member of the dental profession send immediately his views on the Wier bill, H. R. 2341, to the Member of Congress from his respective district and to the Honorable Charles A. Wolverton, chairman, Interstate and Foreign Commerce Committee, House of Representatives, Washington, D. C.

DENTISTS URGED TO ADVISE CONGRESSMEN ON FLUORIDATION AS HEARINGS ARE CALLED ON BILL TO OUTLAW PROCEDURE

The Committee on Interstate and Foreign Commerce of the United States House of Representatives has scheduled a public hearing at Washington, D. C., for May 25, 26 and 27 on a bill which proposes to prohibit the fluoridation of community water supplies throughout the Nation. The bill was introduced by Representative Wier (Democrat, Minnesota), of Minneapolis.

The American Dental Association, which has repeatedly endorsed and recommended that fluoridation of community water supplies as a thoroughly safe, effective, and economical means of reducing significantly the incidence of tooth decay throughout the Nation, is strongly opposed to this bill, as are all other major national-health organizations in the United States.

Members of the health professions are particularly concerned that a committee of the House of Representatives would at this late date attempt to bring back into the national political arena a completely nonpolitical issue which already has been decided by more than 40 years of extensive scientific research.

The Wier bill itself is quite brief. The heading describes it as "a bill to protect the public health from the dangers of fluorination [sic] of water." The text of the bill follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That no agency of the Government of the United States (including the government of the District of Columbia, and of each Territory and possession of the United States), and no agency of any State, or of any municipality or other political subdivision of a State, shall treat any public water supply with any fluoride compound, or make any water so treated available for general use in any hospital, post office, military installation, or other installation or institution owned or operated by or on behalf of any such agency.

Obviously, there are grave doubts as to the constitutionality of this proposed bill which would have the Federal Government begin making decisions on health matters for local communities. There are also reasonable doubts that the measure, even if amended to meet tests of constitutionality, would ever come close to passage by either the House of Representatives or the Senate. Since May 1952, water supplies of the District of Columbia have been fluoridated with the consent of both Houses of Congress.

The opponents of fluoridation will attempt to utilize the public hearings on the Wier bill as another sounding board for their oft repeated but totally unfounded charges that fluoridation of water is harmful. To the extent that these hearings can be used to delay the adoption of fluoridation projects in communities where they have been recommended by local health authorities—to that extent the whole affair will actually be harmful to the future dental health of all the children of those communities.

FLUORIDATION NOW WIDESPREAD

Fluoridation of community water supplies has progressed too widely throughout the United States (see map on p. 451) and elsewhere throughout the world to be delayed for long even if Congress did pass the Wier bill or some similar measure. Just as in local communities where fluoridation has been delayed or rejected, the setback cannot be considered to be more than temporary.

As of May 1, 1954, controlled amounts of fluoride ions were being added to water supplies of 944 cities and towns in the United States with a total population of nearly 17 million. In addition, approximately 3,500,000 persons resided in communities where the water supplies have contained optimum amounts of fluoride ions for generations. Thus, at present, more than 20 million persons, or about one-fifth of all United States residents served by communal water supplies, are routinely drinking fluoridated water.

It is, of course, almost inconceivable that the Congress, either as a body or through one of its committees, would at this time attempt to substitute its decision on a scientific measure for that of local health officials in nearly 1,000 United States cities where fluoridation is in progress, including such metropolitan centers as Baltimore; Washington, D. C.; San Francisco; Milwaukee; Pittsburgh; Indianapolis; Louisville; Miami; Rochester, N. Y.; San Diego; St. Paul, Minn.; Providence, R. I.; Richmond, Va.; and Youngstown, Ohio.

A PROFESSIONAL RESPONSIBILITY

It is possible that the record at the hearings scheduled before the committee, headed by Representative Wolverton, (Republican, New Jersey), could be used to confuse or frighten temporarily the uninformed citizen about fluoridation as was done with the report of the Delaney committee of the 82d Congress. For that reason, the American Dental Association is asking all members of the dental profession to advise their Congressmen immediately about the effectiveness and safety of the fluoridation of public water supplies and to give their Congressmen their views on H. R. 2341.

Dr. Leslie M. FitzGerald, president of the American Dental Association, in a special message to all members of the dental profession, declared:

As professional men it is our duty to advise Members of Congress on fluoridation just as it is our responsibility to advise our patients on the prevention and treatment of disease. Fluoridation has been proved to be a safe and beneficial health procedure. The scientific facts are available. They are not going to be changed by a show of hands of any political group. It is time that the profession make its voice heard in opposition to this continuing false propaganda against fluoridation.

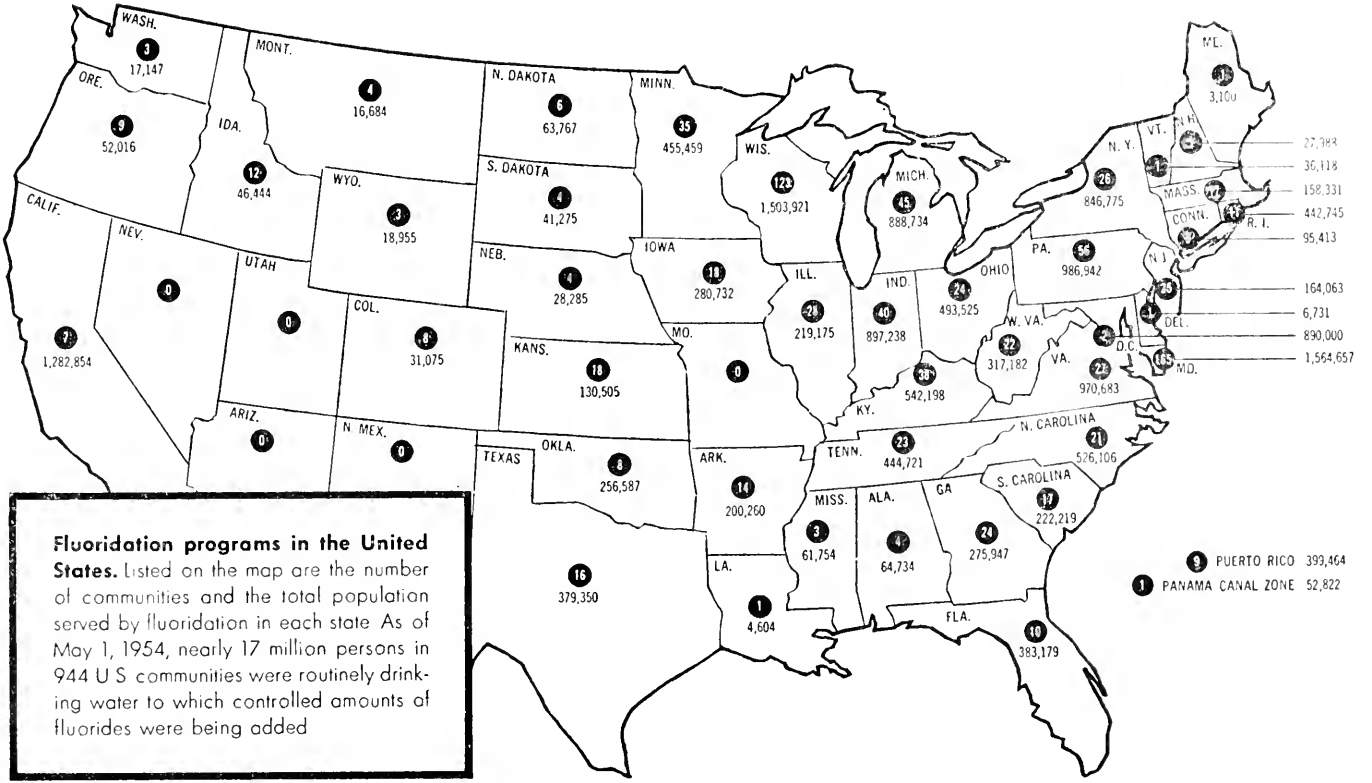
The American Dental Association's primary concern is that the hearings on the Wier bill provide a full opportunity for the presentation of all the scientific evidence relating to the fluoridation of water as a means of reducing tooth decay, and for a thorough evaluation by recognized authorities in the field of dentistry, medicine, biochemistry, and all related areas of science of the statements, reports, and claims presented in testimony before the committee.

Representative Wolverton has announced that during the hearings there will be equal time given to witnesses who are against and witnesses who are in favor of the fluoridation of community water supplies.

WHO FAVORS FLUORIDATION?

Every major national health organization has gone on record favoring the fluoridation of community water supplies. A partial list of these organizations follows:

American Dental Association
Dental societies of all 48 States and the District of Columbia
American Medical Association
United States Public Health Service
American Academy of Pediatrics
Association of State and Territorial Health Officers
American Public Health Association
American Public Welfare Association
Commission on Chronic Illness
National Research Council



Fluoridation programs in the United States. Listed on the map are the number of communities and the total population served by fluoridation in each state As of May 1, 1954, nearly 17 million persons in 944 U S communities were routinely drinking water to which controlled amounts of fluorides were being added

American Hospital Association
American Nurses Association
Inter-Association Committee on Health
American Water Works Association
State and Territorial dental directors
American Society of Dentistry for Children
American College of Dentists
Dental section of the American Association for the Advancement of Science
Various State and county medical societies

Endorsements of fluoridation of water supplies have also been made by numerous groups such as the American Legion, the National Congress of Parent and Teachers, the United States Junior Chamber of Commerce, and the Congress of Industrial Organizations and by countless millions of individuals interested in improved dental health for all children.

WHO OPPOSES FLUORIDATION?

As could be expected from the foregoing, there is no recognized national health organization, association, or group on record as opposed to the fluoridation of community water supplies.

It is true that there are members of the medical, dental and chemical professions who are opposed to fluoridation. But they represent only a very tiny fraction of the total members of these professions. In most instances, these individuals do not question the effectiveness of the procedure. Instead, they raise hypothetical objections on the grounds that the addition of fluoride ions to water supplies might in some way be toxic. Almost without exception, these individuals have not carried on any actual research in the matter but have relied upon armchair speculation to develop their hypothetical case against fluoridation. Gradually, these individuals are accepting the opinions of their colleagues of the safety of the fluoridation procedure.

By far the larger and more vocal group of opponents of fluoridation are individuals totally unconcerned with scientific opinion. They are organized in various communities under such unidentifiable names as citizens' committee against fluoridation, pure water committee, etc. Generally, they are engaged in a rather large traffic of scare pamphlets full of obsolete, irrelevant, and often totally untrue statements regarding fluoridation. In a recent report on water fluoridation, the St. Louis Medical Society referred to these charges as ranging from "Operation Rat Poison to communistic plot themes with a measure of food faddism for good measure."

In communities where fluoridation has been under public consideration, particularly those in which there has been a referendum on the matter, the opposition leaders usually include drugless healers, chiropractors, food faddists, naturopaths, and those who, for a lack of a better description, could be labeled as scare pamphleteers. Also often prominent in the antifluoridation groups are individual members of certain religious groups who are under the erroneous impression that fluoridation of water supplies is somehow or other a medication. No national church group has publicly taken a stand against fluoridation.

WHAT ABOUT THE EVIDENCE?

Safety

There is more evidence relating to the safety of the addition of fluoride ions to water than there is for the addition of any other chemical to any food or liquid. Since the now-famed research on mottled enamel started more than 40 years ago by Dr. Frederick S. McKay, of Colorado Springs, Colo., and the first epidemiological studies of the relationship between fluorine and dental decay which were begun in 1931 by Dr. H. Trendley Dean, of Chicago, noted research scientist and secretary of the Council on Dental Research of the American Dental Association, several thousand reports on fluorine have been published in the scientific literature. The Kettering Laboratory at the University of Cincinnati recently listed more than 5,500 separate references in its Classified Bibliography of Publications Concerning Fluorine and Its Compounds in Relation to Man, Animals, and Their Environment, including Effects on Plants. A similar bibliography containing nearly 1,400 references was recently compiled by the University of Rochester for the Atomic Energy Commission.

The opponents of fluoridation have been quite prolific in recent years in concocting reports of possible ill effects from the addition of fluoride ions to drinking water as recommended by health officials. These included assertions that fluoridation would: cause or accelerate the growth of cancer; have harmful effects on the kidneys, the arteries, and all internal organs; make bones brittle; aggravate acne and cause a variety of other bodily ills. Each of these assertions, of course, has been very carefully investigated by competent scientists and each has been thoroughly refuted. Regarding the cancer charge, the president of the American Cancer Society, Dr. Charles S. Cameron, recently declared:

"The American Cancer Society does not consider fluorine or the common fluorine salts to be carcinogenic. Its position, therefore, with respect to water fluoridation for the purpose of dental caries prophylaxis, is that such treatment of public water supplies is without danger so far as cancer causation is concerned."

It is only because these unsupported and untruthful charges continue to be used by the antifluoridation pamphleteers that it is necessary to point out they are without foundation. Any rational person would assume that fluoridation of water supplies is safe if it carried the full endorsement of such groups as the American Medical Association, the American Dental Association, and the host of health organizations and groups listed above.

For generations, several million persons in the United States have been living in areas where the drinking water contains fluorides in concentrations as high as or higher than that recommended as optimal for dental health. Many studies have been conducted among these people, yet no one has been able to find any adverse physiological effects except an enamel defect known as mottled enamel or dental fluorosis. This condition has been found only in areas where the water supply contains an excessively high concentration of fluoride ions. Mottled enamel is not a factor in areas where water supplies contain the recommended concentration of fluorides.

A significant report on the safety of fluoridated water is the following resolution adopted last December without a dissenting vote by the El Paso County (Colorado Springs, Colo.) Medical Society:

Whereas there is substantial evidence that the water supply of Colorado Springs has contained a surplus amount (2.6 parts per million) of fluoride for a period of about 75 years: Be it

Resolved, That during the long practice of medicine in Colorado Springs, it is the considered opinion of the members of the El Paso County Medical Society that we have not experienced any clinical symptoms which can be attributed to the use of such water * * *.

The actual process of adding fluorides to a water supply is no more involved than adding other chemicals for water purification. These procedures have been carried on for so many years that they have become standardized; fluoridation can be practiced safely by any community that has a public water supply system. There are no noticeable effects upon taste, color, odor, or hardness of the water. Nor have any untoward effects been reported by bottlers, brewers, bakeries, laundries, or chemical plants. No changes in any sewage treatment processes have been required.

FLUORIDES STIMULATE IMAGINATIVE POWERS

ELYRIA, OHIO (AP)—Fluorides were to start going into the city water supply last Thursday, and in the days that followed the water department was flooded with complaints about the taste. The point is, due to a delay in testing, the fluorides did not go into the water until yesterday.—From the Canton, Ohio, Repository, April 29, 1954.

Effectiveness.—Carefully controlled experiments have shown that children who drink fluoridated water during the years their teeth are formed will have, on the average, from 60 to 65 percent less tooth decay than those of the corresponding age group who live in areas with fluoride-free waters. For example, in Grand Rapids, Mich., 6-year-old children who had been drinking fluoridated water since their birth were found to have 70.8 percent less tooth decay than 6-year-old children in a nearby community with fluoride-free water. For New-

burgh, N. Y., where water supplies have been fluoridated since 1945, reductions of 69.4 and 67.8 percent in the amount of dental decay were reported for children in the 6- and 7-year age groups, respectively. (See table below.)

There is virtually no disagreement on the effectiveness of controlled fluoridation in reducing the incidence of dental decay. A particularly significant aspect of the evidence on this point is the fact that the rate of reduction in tooth decay from fluoridation has been demonstrated to be approximately the same in all parts of the Nation, despite the fact that these tests were conducted by different investigators under varying climatic and geographical conditions.

Costs.—A third factor of note regarding fluoridation is its cost. Experiences at various sized water works have shown that the average per capita costs of the procedure range from 4 to 14 cents per year with the average somewhere between 9 and 10 cents a year, about the cost of an ice cream cone.

Fluoridation study projects

Community	Date started	Report period (years)	Age group (years)	Reduction in decay (percent) [1]
Grand Rapids, Mich.	1945	8	6	70.8
			7	52.5
			8	49.2
			9	48.1
			13	39.7
Brantford, Ontario, Canada	1945	7	6	59.4
			7	69.5
			8	51.5
			9	46.2
			13	32.9
Newburgh, N. Y.	1945	7	6	69.4
			7	67.8
			8	40.4
			9	51.4
Evanston, Ill.	1947	4	6	73.6
			7	56.4
			8	35.4
Sheboygan, Wis.	1946	6	[2] 9-10	35.3
			12-14	29.7

[1] Decayed, missing, filled (DMF) permanent teeth.
[2] 4th grade.
[3] 8th grade.

Source: Committee on Dental Health of the Food and Nutrition Board, National Research Council and National Academy of Sciences.

RECOMMENDATION OF THE ADA

The safety and effectiveness of fluoridation are summarized in the following resolution which was adopted unanimously at Cleveland, Ohio, last September by the 394 members of the house of delegates representing the 80,000 members of the American Dental Association:

Whereas in 1950 the American Dental Association recommended the fluoridation of public water supplies as a safe and effective procedure for reducing the incidence of dental caries, and

Whereas this recommendation was based on an accumulation of many years of careful study and scientific research by competent individuals and groups, and

Whereas the councils on dental health, dental research and dental therapeutics of the American Dental Association have continued to evaluate all available evidence relating to the fluoridation of communal water supplies, and

Whereas all additional scientific findings have served to substantiate further the effectiveness and safety of fluoridation under properly controlled conditions, and

Whereas this evidence continues to demonstrate that fluoridation will have no untoward effect on general health and will significantly improve health through the reduction of dental decay: Therefore, be it

Resolved, That the American Dental Association reiterate its recommendation that all local communities be urged to adjust the fluoride content of their public water supplies to the level recommended by responsible State and local health authorities.

THE OUTLOOK FOR THE FUTURE

Dental scientists confidently predict that within a few years the fluoridation of community water supplies will be as common throughout the United States as the chlorination of drinking water and the pasteurization of milk are today. Fluoridation is being opposed in very much the same manner as were both chlorination and pasteurization. There was hue and cry that the entire populace would be poisoned if the deadly gas, chlorine, was added to drinking water. Yet today, chlorine is as commonplace in community drinking water supplies as are electric pumps at the waterworks. Pasteurization is likewise accepted as commonplace. And for the approximately 20 million United States residents living in communities where the local water supplies contain fluorides in desirable amounts, fluoridation is equally accepted.

A COMMUNITY RESPONSIBILITY

The American Dental Association believes firmly that the final decision on fluoridation of community water supplies must be made by each community on the advice and counsel of local health authorities and the members of the health professions. This belief stems from the traditional adherence of members of the dental profession to the principle of local determination and control of community health services.

The American Dental Association does not believe that any national group or agency, Government or private, has any right to dictate to any local community a decision on a public-health measure such as a fluoridation of community water supplies. Intrinsically scientific matters cannot be proper subjects for political debate but must be settled on the basis of reliable and authentic scientific data.

The association believes that the Wier bill, which proposes to deny to all children the benefits of the fluoridation of water supplies in their home communities, is contrary to the public interest.

PLAINFIELD DENTAL SOCIETY,
Plainfield, N. J., May 24, 1954.

Hon. CHARLES A. WOLVERTON,
Chairman, Interstate and Foreign Commerce Committee,
House Office Building, Washington, D. C.

MY DEAR MR. WOLVERTON: On May 25, 26, and 27, your committee will hold hearings on the Wier bill, H. R. 2341.

The Plainfield Dental Society, composed of dentists from parts of Union, Somerset, and Middlesex Counties, 4 years ago appointed a committee to investigate the value of fluoridation of communal water supplies. After considerable deliberation and study of available literature, this committee recommended the endorsement of fluoridation of communal water supplies as a safe and effective means of reducing the toll of dental caries in the teeth of children. This society after discussion at its December 12, 1951, meeting, unanimously passed a resolution urging and approving the fluoridation of communal water supplies, and recommended that the water supplies of this area be fluoridated. Since that time, the committee and society have endeavored to present the true picture of fluoridation to the people of this area.

Inasmuch as scientific research has proven overwhelmingly that fluoridation of communal water supplies reduces the incidence of dental decay to a great extent with no deleterious effects, the Plainfield Dental Society, representing 130 dentists from this area, requests that you consider the endorsements by the many responsible health organizations throughout the country and urges the defeat of this bill.

I am enclosing a copy of an unbiased report by a citizens committee of the evening department, Village Improvement Association of Cranford, N. J., and presented to that association in February 1954.

It is requested that this letter and the enclosed copy of the fluoridation survey report of Cranford, N. J., be filed for record as part of the hearings.

Very truly yours,

——— ———, *President.*

FLUORIDATION SURVEY REPORT (CRANFORD)

This committee has attempted in this paper to present a brief survey of scientific data on the fluoridation of water. Realizing the immensity of such a task, it humbly hopes that it has achieved some semblance of the same in these dozen crowded pages. Our appreciation is extended to Dr. Charles Darlington, chief pathologist at Muhlenberg Hospital, for his advice and generosity in letting us use his materials and to our health officer, Mr. William P. Smith, the other member of this committee, whose energies in gathering data matched his zeal and interest in the problem.

Fluorine is a trace element of body composition. It is a natural constituent of many foods, and of practically all drinking water. It would be almost impossible to find a diet with no fluorides. The water here in Cranford that we drink has a trace quantity in it. As for the food that we eat, round steak will have a fluoride content of 1.3 parts per million, cheese 1.6, rye bread 5.3, butter 1.5, fresh fish 1.6 to 7, canned salmon 8.5 to 8, and tea (dry analysis) 30 to 60 parts per million. The daily intake of fluorides has been estimated to be 0.19 to 0.32 milligrams. This fact seems to clearly establish that the fluoride ion is not foreign to our diet and existence, despite its well-known toxicity in high concentrations.

ORIGIN OF THE FLUORIDATION THEORY

Although drinking water is considered the most universal carrier of the fluoride ion, the quantity of calcium fluoride found dissolved in it seems to be a matter of geographic identity. Some areas, such as ours, receive very little, while other areas of the world, including our great Southwest, receive considerable amounts. High concentrations of calcium fluoride in some of these southwestern towns was found in 1931 by H. V. Churchill, chief chemist of Alcoa, and also by Margaret C. Smith and H. V. Smith of the University of Arizona to be responsible for the mottled teeth of the people. It was also discovered that associated with the mottling was a greater resistance to tooth decay or dental caries.

This observation led the way for the work of Dr. H. Trendley Dean, Dr. Frederick S. McDay, Dr. F. A. Arnold, Dr. F. J. McClure, and many other research men. Theory became fact. There was no doubt but that it was the fluoride ion that in some way affected the structure of the teeth themselves. Dr. McKay states that, "It might be said that for the first time a new and different kind of tooth structure is being dealt with which has the property of resisting the initial caries attack. When caries occurs it is practically limited to the fissures and pits. Caries of the proximal surfaces of the anterior teeth is almost negligible." In order to obtain this resistance to decay a child must have an adequate fluoride intake during the calcification of the teeth from birth to the 12th year.

CLINICAL AND EXPERIMENTAL EVIDENCE

Experiments and studies of the effect of fluorides have been carried on for the past 20 years. About 5,000 titles of scientific articles bearing on the physiological effects of fluorides appear on the list which was compiled at the Kettering Laboratory at the University of Cincinnati School of Medicine.

Dr. H. Trendley Dean, director of the National Institute of Dental Research, showed in his epidemiological investigations of 7,257 children aged 12 to 14 that the prevalence of dental caries (decay) was greatest in those children who had drunk from birth water containing no fluorides. The prevalence of decay was progressively less in children reared in cities with public water supplies having a fluoride content up to approximately 1 part per million. Beyond this concentration there was little, if any, advantage. The children reared in cities where water contained approximately 1.0 part per million showed about one-third as much dental decay as those children reared in cities with fluoride-free water. These observations have been confirmed many times.

Considerable work has been done by Dr. Dean and other research men toward determining what is known as optimum level of fluoride or threshold value, that is, that concentration of fluoride per million parts of water which will bring about the desired resistance to dental decay with mottling limited to less than 10 percent of the children. This mottling should not be visible except to the trained eye of the dentist. It was found that a concentration of approximately 1.0 parts per million fluoride would produce these results. However, climatic conditions are a factor to be considered, as the warmer the climate the more water is consumed. For example, in the Chicago area where the mean

annual temperature is 49° F., a 1.0 to 1.5 parts per million fluoride concentration was recommended, whereas in Georgia with a mean annual temperature of 68° F., the threshold value was found to be 0.5 to 0.7 parts per million. The amount recommended for Cranford would probably be about 1.0 part per million. These limits are set sufficiently low so that no harmful effects will result. This is pointed out by a statement of the ad hoc committee on fluoridation, which was convened by the National Research Council to review the evidence and prepare an impartial report. Their report states that, "The margin between the optimal quantity of fluoride in drinking water which is required for maximal benefit in tooth development and the amount which produces undesirable physiological effects is sufficiently wide to cause no concern."

STUDIES OF THE PHYSIOLOGICAL EFFECTS OF FLUORIDES

Scientists feel that the most sensitive indication of a fluorosis is the mottling of teeth. Keeping the concentration of fluoride below that which is required to give a definite mottling is agreed to be a safe margin. Studies have been made on persons who for all their lives have been drinking water with much higher than recommended concentrations of fluoride. Since the intake of fluoride results in a pronounced increase in the fluorine content of the teeth and bones, most investigations include X-ray examinations. In such a survey conducted by Dr. Dean at Bartlett, Tex., where the water contains 8 parts per million fluoride, 11 percent of the people did show an increased bone density, but there was no functional impairment. Moreover, there was no evidence of skeletal fluorosis in similar tests conducted on persons who have been drinking water containing 1.2 to 3 parts per million of fluoride. (Hodges and others, 1941). It has been estimated that from the average adult consumption of drinking water (1½ quarts) there would be an intake of approximately 1.6 milligrams of fluorine of the water had a fluoride content of 1.0 part per million. This 1.6 milligrams compares with the 3.0 to 4.0 milligrams Dr. McClure in his fluorine balance studies has shown that the body can handle efficiently through elimination. Dr. McClure states that, "The results of fluorine balance studies are interpreted as being strongly indicative that quantities of fluorine up to 3.0 to 4.0 milligrams ingested daily are perhaps more than 90 percent eliminated by the average adult." Greater quantities of fluoride than that mentioned above have been handled efficiently by the body. Studies were made on a 63-year-old man and his 57-year-old wife, who for the greater part of their lives have lived in Bartlett, Tex., where the water contained 8 parts per million of natural fluorides. Their daily intake of fluorides was to be 15.3 milligrams, most of which was eliminated. Neither of these persons showed any changes in bone tissue or any functional impairment of any kind.

Dr. Francis F. Hayroth in his paper Toxicological Evidence for the Safety of the Fluoridation of Public Water Supplies states that, "Epidemiologic data and clinical and radiographic examinations of exposed industrial workers indicate that only when the fluoride content of a water supply exceeds 5 or 6 parts per million will its prolonged usage give rise to detectable osseous (bone) changes and then only in the most susceptible persons." Dr. Hayroth further states that, "Our metabolic data have shown that when calcium fluoride is taken in solution the fluoride ion derived from it behaves as does that from sodium fluoride." In other words, a fluoride ion is a fluoride ion whether its chemical source be sodium fluoride as used in fluoridation or calcium fluoride which is assumed to be the chemical source for the fluoride ion found present in drinking water.

Studies of bone fracture data of high-school boys and young adult Army selectees from fluoride and nonfluoride areas indicate no difference in the number of bones fractured. No evidence could be found that bones from fluoride areas were more brittle. In fact, Dr. L. B. Barnett of Hereford, Tex., has this to say about a group of hip-fracture patients whose average age was 82 and who it was estimated consumed 2.05 milligrams of calcium fluoride daily, "X-rays of the bones and hip joints of these old people resemble those which we see in young adults. None of the patients died of the fractures of the hip and all united." The average healing time was 8 weeks.

Careful analysis of mortality and morbidity statistics of various parts of the country show no significant differences between fluoride and nonfluoride areas. At this time, 3½ million people in 44 States are drinking, and have been drinking for many years, water with a natural fluoride content of 0.7 to 2 parts per million. It is felt that had they been adversely affected there would be some indication by this time. No doctor or any research man has been able to find any such evidence.

FLUORIDATION PROJECTS

Results of fluoridation projects begun in 1945 are more and more indicative of the similarity of protection offered by fluoridated water and water containing enough of the natural fluoride. In May 1945 sodium fluoride was added to the Newburgh, N. Y., water supply to increase the fluoride content to 1.2 parts per million. Kingston, N. Y., with almost no fluoride in its water supply, was kept as the control city. After 6½ years of fluoride experience, the decayed-missing-filled rate (DMF) of children at Newburgh was half that of Kingston. Five hundred children in each city are also given complete physical examinations annually, as well as dental examinations. These include blood counts, X-ray studies of the hands, forearms, and legs, and routine urinalysis. Except for their greater resistance to tooth decay there is no evidence that the children of Newburgh are any different from the children of Kingston.

Other fluoridation programs at Grand Rapids, Mich.; Sheboygan, Wis.; Marshall, Tex.; and other cities are bringing similar results. The American Dental Association (Fluoridation, January 1953) states: "Studies begun in 1945 indicate that a similar degree of protection against dental caries is found in areas where fluoride content has been adjusted to an optimum level as is found in areas where the same concentrations occur naturally." The engineering involved in these programs is simple, and the cost, while it varies from city to city, is low.

ENDORSEMENT OF FLUORIDATION

"No public health program at the time of introduction ever had as much scientific data based on human experience as is now possessed in the fluoridation program."

The American Medical Association has given approval both with respect to the safety and desirability of fluoridating water supplies.

Fluoridation of public water supplies has been endorsed by the American Water Works Association, American Dental Society, the United States Public Health Service, the American Public Health Association, the Inter-Association Committee on Health, and others.

CRITICISM OF FLUORIDATION

Criticism of fluoridation stems from several sources. There is a small group of scientists who feel that all is not known about the physiological effects of fluoride nor will it ever be known. They agree that all the data presently available make fluoridation appear safe and desirable but feel that more information should be obtained. This type of argument is of an entirely different caliber than those found in sensational articles written in a deliberate attempt to smear and discredit fluoridation research. Without references to experiment or experience there are wild claims that fluoride in water will be responsible for anything from appendicitis, diabetes, sterility, mental retardation, to nephritis and cancer and other things. They call it rat poison and list the symptoms of acute fluoride poisoning which is an entirely different matter.

Occasionally, one finds a reference to an experiment on cancer in rats, but no one bothers to mention that the results were retracted by a very embarrassed University of Texas when it was found that all the rats had come from a strain highly inbred for cancer and that fluoride had no bearing on the matter.

There are some "food faddists" who object to the procedure and feel that perhaps the solution lies in obtaining the additional fluoride from a daily "bone meal cocktail."

You might happen to see antifluoridation literature published by the Citizens Medical Reference Bureau, Inc., which is staffed by a man claiming no medical affiliation and whose main function seems to be the opposition of vaccination for school children.

One of the wildest and vilest accusations which this committee has found among some of this "literature" is the assertion that those who desire fluoridation are Communist inspired.

Considerable references have been made to the investigations carried out by the Delaney Committee and the statements made by Representative A. L. Miller. Any examinations of the proceedings will show a definite predisposition on the part of the committee which was reflected in their questioning of the 18 witnesses. They seemed to accept as fact the personal opinions of the seven witnesses who opposed fluoridation and who had done no recent experiments themselves. The 11 who represented major medical, dental, and health groups

were cross-examined in detail on the data they had brought with them. J. Roy Doty, secretary, council on dental therapeutics, American Dental Association, in his analysis of the Delaney Committee report on the fluoridation of drinking water has this to say:

"It is our opinion that the congressional committee report suffers from a lack of adherence to the proper standards of investigative procedures as evidenced especially by its failure to substantiate many statements which it accepted as fact. The committee also accepted misgivings of a few individuals who appeared as witnesses, in spite of the weight of the evidence furnished by such organizations as the American Dental Association, the American Medical Association, the United States Public Health Service, the National Research Council, the American Public Health Association, and the Association of State and Territorial Health Officers. The committee, through its statement that "dental decay is not contagious nor can it be said to constitute a serious danger to health," implies that a disease is not a community problem unless it is contagious and fails to recognize the fact that dental caries is the most prevalent disease of mankind.

"In our opinion, the evidence to demonstrate the safety of the fluoridation procedure is so overwhelming that there is no justification for further denying to large numbers of children the benefits of better dental health which will result from this procedure."

SUMMARY

1. We feel that it has been established that the fluoridation is not foreign to our existence since it is a trace constituent of teeth and bones and naturally occurs to some degree in water and a great many foods.

2. The committee feels that it has been established that the adjustment of fluoride to an optimum level of approximately one part per million will reduce dental decay of children in a fluoride-free community up to 60 percent.

3. The committee feels that there is considerable evidence justifying the safety of a fluoride content of one part per million. Attesting to this safety are the 3½ million people who for many years have been drinking fluoridated water.

4. The committee feels fully satisfied that the committee of the American Dental Association and the American Medical Association who critically reviewed the research data did not act hastily and would not have endorsed fluoridation had there been any reasonable doubts.

5. The committee urges the members of its community to be of an inquisitive mind and ask the "why and wherefore" when confronted with fantastic tales of what fluoridation will do. We urge you to differentiate them into fact, fear, and fiction.

MIRIAM P. MOODY,
Chairman, Fluoridation Survey Committee.

AMERICAN MEDICAL ASSOCIATION,
Chicago, Ill., May 10, 1954.

Hon. CHARLES A. WOLVERTON,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D. C.

DEAR SIR: I would like to take this opportunity, on behalf of the American Medical Association, to submit for your consideration the views of the American Medical Association concerning the fluoridation of drinking water, which we understand is included among those subjects currently being studied by your committee and which will be the subject of hearings later this month.

The councils on pharmacy and chemistry and foods and nutrition of the American Medical Association made a careful study of all available data with respect to the ingestion of fluorides in drinking water under natural conditions and when fluorides are added. On the basis of this study, the councils on pharmacy and chemistry and foods and nutrition adopted the following statement on November 2, 1951:

"The council on pharmacy and chemistry and the council on foods and nutrition have been requested to state their opinion regarding the safety of fluoridation of water supplies, a procedure which has now been adopted by more than 140 cities.

"The councils are unaware of any evidence that fluoridation of community water supplies up to a concentration of one part per million would lead to structural changes in the bones or to an increase in the incidence of fractures. The only difficulty so far revealed is a possible increase in mottling of the tooth enamel. The available evidence based on thousands of observations indicates that the incidence of mottling of the enamel in children who drink water containing fluoride up to a concentration of one part in a million is minimal and detectable only by careful dental examination. It occurs only in a small percentage of children and is so slight as not to present a problem from the point of view of appearance or strength of the teeth. Evidence of toxicity other than the effect on enamel has not been reported in communities where the water supply has several times this concentration. After considering the evidence available at this time, the councils believe that the use of drinking water containing up to one part per million of fluoride is safe. However, the use of products which are naturally high in fluoride content, such as bonemeal tablets, or of lozenges, dentifrices, or chewing gum, to which fluoride has been added, should be avoided where the drinking water has been fluoridated. In places where children are subjected to warm temperatures and consequently drink large amounts of water, a lower concentration of fluoride may be necessary to avoid mottling of the teeth."

The councils purposely refrained from making any recommendation that communities support or oppose projects for the fluoridation of water supplies. It was the opinion of the councils that this question should be answered by the dental profession.

The house of delegates of the American Medical Association at its meeting in Los Angeles, Calif., December 4 to 7, 1951, adopted the following resolution:

"Whereas carefully controlled studies have demonstrated that fluoridation of water supply has been definitely beneficial in the reduction of dental caries in the younger age group; and

"Whereas the Council on Pharmacy and Chemistry has reported that fluoride is nontoxic in community water supplies up to one part per million; and

"Whereas the addition of fluoride to community water supplies seems to have merit: Therefore be it

"*Resolved*, That the house of delegates of the American Medical Association endorse the principle of fluoridation of community water supplies."

The house of delegates of the association went a step further than the councils in endorsing the principle of fluoridation. Again, however, the house of delegates did not urge or recommend that any communities undertake to fluoridate their water supplies.

In summary, then, the American Medical Association in 1951, through its councils on pharmacy and chemistry and foods and nutrition and house of delegates, reached the following conclusion with respect to fluoridation: Fluoridation of public water supplies in a concentration not exceeding one part per million is nontoxic and its principle is endorsed. The position of the association has not changed since that time.

It is requested that this letter be made a part of the record of the hearings to be conducted by your committee on this subject.

Sincerely,

GEORGE F. LULL, M. D.,
Secretary and General Manager.

CONGRESS OF INDUSTRIAL ORGANIZATIONS,
Washington 6, D. C., May 24, 1954.

Congressman CHARLES A. WOLVERTON,
Chairman, Interstate and Foreign Commerce Committee,
House Office Building, Washington, D. C.

DEAR MR. WOLVERTON: I understand that you are holding hearings on the matter of adding fluoride to public water supplies. You may be interested in knowing that the CIO executive board at a meeting this March, approved the report of the CIO social security committee endorsing fluoridation of drinking water. We believe this step is a constructive one in preventing dental decay.

We should appreciate having this letter included as part of your committee record.

Sincerely yours,

KATHERINE POLLAK ELLICKSON,
Executive Secretary, CIO Social Security Committee.

UNIVERSITY OF FLORIDA

GAINESVILLE, *May 21, 1954*

HON. CHARLES A. WOLVERTON,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington 25, D. C.

DEAR SIR: My name is A. P. Black. I have the honor to present to your committee comments in opposition to the enactment of H. R. 2341 (Wier) "to protect the public health from the dangers of fluoridation of water."

Following the receipt of an undergraduate degree I accomplished graduate work at Harvard University and at the University of Iowa and hold the doctor of philosophy degree from the latter institution. I have been a member of the staff of the department of chemistry of the University of Florida since 1919 and head professor since 1949. I have for many years been active in the field of water chemistry and have conducted intensive investigations on the presence of fluorides in natural waters. In 1936 I made a survey of the fluoride content of the public water supplies of the State of Florida—one of the first, if not the first, State survey to be made in this country. In the same year I was made chairman of a committee of the American Water Works Association on methods of determining fluorides. After 4 years of work, that committee in 1941 made its report and the recommeded method has been in use in this country and abroad since that time. In 1949 I was chairman of the American Water Works Association committee on the fluoridation of public water supplies. The report of this committee was adopted as the official policy of the American Water Works Association and, as such, was the first statement of policy to be adopted by any national organization. I have made more than 50 addresses on fluoridation to professional and scientific groups throughout the country, and am the author of numerous papers on fluoridation. My views with respect to fluoridation are fully set forth in a monograph which I have written and which is entitled "Some Facts Concerning Fluoridation." A copy of that monograph, together with copies of other reprints referred to above, are presented as part of this statement and it is requested that they, together with this statement, be inserted in the record. I should like to confine my comments in this statement to three specific points:

1. The Department of Health, Education, and Welfare is charged with the responsibility of protecting the health of the American people. The United States Public Health Service, an agency of that Department, has approved the fluoridation of public water supplies; has set up machinery to publicize the beneficial effects of the procedure and to assist the various States in implementing fluoridation programs; and has established in its drinking water standards a maximum permissible limit of 1.5 parts per million of the fluoride ion.

The Food and Drug Administration is charged with the responsibility of seeing to it that foods (including water) distributed in interstate commerce shall not contain any substance deleterious to health. This Administration issued on July 17, 1952, and published in the Federal Register on July 23, 1952, a statement of policy designated S–327 which contains the following statement:

"The Federal Security Agency will regard water supplies containing fluorine within the limits recommended by the Public Health Service as not actionable under the Federal Food, Drug, and Cosmetic Act."

If, after hearing the evidence presented to you by individuals who by virtue of training and experience have shown themselves to be competent to testify with authority, the committee feel that the practice of fluoridation requires further investigation, then it would appear that the proper course of action would be to refer it back to these agencies of the Federal Government charged with that responsibility.

2. I should like to refute the statement so often made by the opponents of fluoridation that fluorides naturally present in water are not identical with, and would not be expected to behave in a manner similar to, fluorides added to water. The statement is not true for the following reasons:

(*a*) Most salts, including the salts of fluorine which occur in water or which are added to water for the reduction of caries, dissociate into positively and negatively charged ions. The salts themselves are, therefore, not present in the water but only the ions resulting from their dissociation. In the case of naturally present fluorides in water and in the case of fluorides added to water, these ions are identical, and it is not logical to suppose that the same ions in water would produce different effects depending whether they were naturally present or have been added.

(*b*) The chemical methods for determining fluorides in water work equally well in the case of fluorides already present or in the case of fluorides added to the water. As a matter of fact, there is no known method of differentiation, physically or chemically, between fluorides naturally present and fluorides added.

(*c*) The effects of natural fluorides and added fluorides in reducing dental caries are identical for the same concentration. This has been conclusively shown by comparison of the Grand Rapids and Newburgh data with data from the same age groups at Aurora, Ill., where fluorides are naturally present. The same conclusions have been reached in numerous other studies conducted throughout the country.

3. I oppose the proposed legislation as improper since decisions with respect to such matters should be left to State and local authorities. I would, with equal vigor, and for the same reason, resist the passage of legislation to require the fluoridation of all public water supplies.

The fluoridation of public water supplies for the reduction of dental caries is one of the great advances in public health, not only of this generation, but of this century. The attention of your committee is respectfully called to the fact that other great advances in public health have been misunderstood and have often met with strong opposition. The monumental work of Louis Pasteur was ridiculed for many years, yet it stands today as a landmark in man's fight against disease.

I express to you the hope that your committee, in considering the statements which are presented to you, will apply to them the rigid criteria which all good scientific work must meet and will in your wisdom, base your conclusions upon the evidence thus assembled.

Respectfully submitted.

A. P. BLACK,
Head, Department of Chemistry, University of Florida, Gainesville, Fla.

The following papers and monograph written by A. P. Black are submitted as part of this statement with the request that they be made a part of the record:

(Filed with the committee for appropriate consideration.)

1. Fluorine in Florida Waters. Pages 5–9. Proceedings of the 11th Annual Convention of the Florida Section, American Water Works Association (1937).

2. Methods of Determining Fluorides. Committee report, reprinted from the Journal of the American Water Works Association, volume 33, No. 11, November 1941.

3. The Fluoridation of Public Water Supplies. A statement of recommended policy and procedure, reprinted from the Journal of the American Water Works Association, July 1949.

4. The Chemist Looks at Fluoridation. Pages 137–144. Journal of the American Dental Association, February 1952.

5. Some Facts Concerning Fluoridation. A monograph prepared for the Georgia Department of Public Health and the Georgia Dental Association, and now being reprinted by the Georgia and South Carolina Departments of Health.

THE JOHNS HOPKINS UNIVERSITY,
SCHOOL OF HYGIENE AND PUBLIC HEALTH,
Baltimore, Md., May 24, 1954.

Hon. CHARLES A. WOLVERTON,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D. C.

DEAR MR. WOLVERTON: I have been apprised that your committee will hold hearings on May 25, 26 and 27, 1954 on H. R. 2341 a bill to protect the public health from the dangers of fluorination of water. On account of physical disability, I am unable to appear before the committee but I would like to express my opposition to the enactment of this bill. I believe that the passage of such legislation would be unwise and detrimental to the interests of public health of many communities of the United States. Evidence of the value of this procedure in the partial prevention of dental caries is convincing. On the other hand, there is no acceptable evidence that the addition of fluorides in proper dosage of trace amounts to a water supply deficient in this element is in any way detrimental to the physiological well-being of consumers, sick or well, young

or aged. The danger is purely hypothetical. Fluoridation of water appears at present to be the only effective procedure for large-scale control of dental caries in urban population groups. This judgment is based upon a critical review of the literature on this subject undertaken first as chairman of the Ad Hoc Committee on Fluoridation of Water Supplies for the National Research Council and, later, as chairman of a committee created by the Chronic Disease Commission. Copies of these reports are attached herewith, together with an abstract of my educational and personal qualifications taken from American Men in Science.

I respectfully request that my statement be made a part of the record of the hearing, together with the attached documents.

Very truly yours,

KENNETH M. MAXCY, M. D.,
Professor of Epidemiology.

[From American Men of Science, 1949]

Maxcy, Dr. Kenneth F(uller): School of Hygiene and Public Health, Johns Hopkins University, Baltimore 5, Md. Epidemiology. Saco, Maine, July 27, 89; m. 18; c. 3. A. B., George Washington, 11; M. D., Hopkins, 15, Rockefeller Foundation fellow, 19–21, Dr. P. H. (epidemiol.), 21. Res. house officer, Hopkins Hosp., 15–16, asst. res. pediatrician, 16–17; asst. internal med., Henry Ford Hosp., 17–19; from asst. surgeon to surgeon, U. S. Pub. Health Service, 21–29; prof. prev. med. and bacter., Virginia, 29–36; prev. med. and pub. health and head dept., Minnesota, 36–37; prof. bacter., Sch. Hygiene and Pub. Health, Hopkins, 37–38, epidemiol., 38– , director, Poliomyelitis Research Center. Sci. director, int. health div., Rockefeller Foundation, 37–40, 42–45, 48. Ed. board, "Am. Jour. Hygiene," Mem. cmt. sanit. eng., div. med. sciences, Nat. Research Council; mem. med. advisory cmt., Nat. Foundation Infantile Paralysis; mem. exec. cmt., advisory board health services, Am. Red Cross. Consultant, Sec'y War, board invest. epidemic diseases, U. S. A. A. A.; fel. Pub. Health Assn; Assn. Physicians; Soc. Epidemiol. Infectious diseases and public health; malaria and typhus epidemiology; quinine in the treatment of malaria; endemic typhus in the southern United States; scrub typhus in New Guinea; poliomyelitis.

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NATIONAL RESEARCH COUNCIL VIEWPOINT ON FLUORIDATION

AD HOC COMMITTEE REPORT

Report of the Ad Hoc Committee on Fluoridation of Water Supplies, Division of Medical Sciences, National Research Council, Washington, D. C.

The Ad Hoc Committee on Fluoridation of Water Supplies was convened and directed to express its judgment whether, on a basis of a review of the present status of scientific knowledge, supplementing the fluoride content of public water supplies for the partial prevention of dental caries is a desirable and safe procedure from a physiological viewpoint. Specifically, it has been advocated that, if necessary because of the deficiency of this element, the fluoride content of the public water supplies be adjusted to insure a mean content of approximately 1 part per million of fluorine. While some aspects of water fluoridation are still in the experimental stage, its application has been shown to be technologically practical and economically feasible. However, it remains to be determined by each municipality contemplating installation of this procedure: (*a*) What benefits may be expected, and (*b*) what the potential liabilities are. After reviewing the available evidence, the committee concluded that the following are the principal considerations, briefly stated, upon which judgment must be based:

1. Under normal conditions of living, fluorine is a trace element in human nutrition (1). Minute amounts are absorbed from certain foods and drinking water and, to a limited extent, are retained by dental and osseous tissues. The quantity of fluorine ingested in food is a relatively unimportant variable; the average diet contains 0.2 to 0.3 milligram daily. Of greater importance is the variable quantity ingested in drinking water. Many of the public water supplies in the United States, particularly those of the large cities, which are derived from rivers, lakes, and ponds, are practically fluoride-free; others contain from traces to 1.5 parts per million fluorine as fluorides. A number of supplies, par-

ticularly those obtained from deep wells and aquifers irregularly distributed in various parts of the country, contain from 1.5 parts per million to 7 or 8 parts per million—very rarely more (2).

2. From the epidemiological investigations of Dean (3), there is convincing evidence that, within certain limits, there is an inverse relationship between the natural fluoride content of drinking water and the frequency of dental caries in children who depend upon these supplies. The most useful index of the amount of caries is the number of decayed, missing, and filled permanent teeth (DMF) per child, per 100 children, or per 100 permanent teeth, at specified ages.

Dean's original observations were based upon 7,257 selected white school children aged 12 to 14 in 21 cities of 4 States. The prevalence of caries (DMF) was greatest in those children who had used continuously from birth the public water supplies which were fluoride-free. The prevalence was progressively less in comparable children reared in cities with public water supplies having a fluoride content up to approximately 1 part per million. Beyond this concentration there was little, if any, advantage. Children reared in cities where drinking water contained approximately 1 part per million of fluoride experienced only approximately one-third as much dental caries as those reared in cities where water supplies were fluoride-free (4). These basic observations have been confirmed and extended by investigators in this and other countries.

3. The caries-preventive effect of adequate fluoride intake is principally conferred upon children when the dentine and enamel of the permanent dentition are being formed: that is, from birth to approximately the 12th year. There is evidence that this increased resistance to dental caries is carried over to some extent into later life, so that there is a delay of at least several years in the incidence of caries (5). A recent detailed epidemiological study of adult populations considerably extends knowledge in this field (6). These observations show that marked caries-inhibitory effects of fluoride waters are operative in the 35 to 39- and 40 to 44-year-old groups.

4. A considerable number of experimental studies have been conducted in the laboratory to explore the inhibition by fluorides of induced experimental caries in rats and hamsters, and to explain this action. The results give consistent support to the concept of a relationship between human caries and fluorides (1). Although it appears probable that caries resistance is associated with the incorporation of fluorides into the tooth structure, the exact mechanism by which it is mediated is unknown. The causes of caries are only partially understood.

5. The margin between the optimal quantity of fluoride in drinking water that is required for maximal benefit in tooth development and the amount that produces undesirable physiological effects is sufficiently wide to be of no concern. The most sensitive indication of the latter amount is the enamel defect of the permanent teeth known as endemic fluorosis, or mottled enamel. The epidemiological studies of Dean (7), which were based upon examination of 5,824 white children in 10 States, showed a direct correlation between severity of the manifestations of mottled enamel and the increasing fluoride content (up to 5 parts per million) of the water supplies upon which the children were dependent. At approximately 1 part per million, less than 10 percent of children show the least detectable evidence of disturbances in enamel formation, which are not visible except to the trained eye of the examining dentist. Beginning at approximately 2 parts per million, an increasing proportion of children have mottled enamel of a grade that is easily apparent. Although such teeth are caries-resistant, they are esthetically objectionable.

6. Although the safe level of fluoride concentration to afford a maximum caries-preventive effect without mottled enamel is approximately 1 part per million, this level varies somewhat with climatic and other factors and must be ascertained for each general area (8). For practical public health purposes, it has been proposed that a safe level has been reached when not more than 10 to 15 percent of children aged 12 to 14 who have used water supplies since birth, and who have been examined under standard conditions, show the mildest detectable type of mottled enamel. Under the climatological conditions prevailing in the Chicago area, where the mean annual temperature is approximately 49° F., this upper limit has been reached by domestic water supplies containing approximately 1.0 to 1.5 parts per million fluoride. On the other hand, in the vicinity of Moultrie or Brunswick, Ga., with a mean annual temperature of 68° F., the upper level has been found to be associated with water supplies containing only 0.5 to 0.7 parts per milion.

7. There is an extensive literature on the pharmacology and toxicology of fluorine and its compounds. This field has been reviewed by several authors (9–12). Only those parts of it which deal with the cumulative action of fluorides

are pertinent to to the question of the safety of fluoridation. Chronic fluoride intoxication characterized by bone, joint, and other tissue changes has been the cause of impaired skeletal function in Danish workmen exposed to fluoride dusts as an occupational hazard (13). The presence of concentrations of fluorides in excess of 5 parts per million in water supplies in certain parts of the world has been reported to have given rise to a number of cases of chronic fluorosis, but the reported data are inadequate to establish the threshold concentration at which storage may be expected to occur to a potentially harmful extent. A radiologic survey at Bartlett, Tex.,[1] where the water contains 8 parts per million, revealed an increased bone density not associated with functional impairment in 11 percent of those examined, but roentgenologic examinations of a limited number of persons living in areas where the water contained from 1.2 to 3.0 parts per million, revealed no evidence of fluorosis (14).

The fluoride concentrations in the urine of normal teen-age boys and young men closely approximate those in their drinking water in regions where the water supplies contain from 0.2 to 4.7 parts per million (9). Flourine-balance studies furnish additional evidence that the human body eliminates the major portion of food- and water-borne fluoride when the quantities ingested do not exceed 4.0 to 5.0 milligrams of fluoride daily (1), although the daily ingestion of 6.0 milligrams led to demonstrable storage (15).

In the accumulated experience, there is no evidence that the prolonged ingestion of drinking water with a mean concentration of fluorides below the level causing mottled enamel would have adverse physiological effects. As the water supplies in various parts of the country contain considerably greater amounts, it is desirable that epidemiologic surveys of the incidence of chronic fluorosis be made in those regions, and that further balance studies be undertaken in order to establish the facts about storage of fluoride at moderately elevated levels of intake.

8. In 1945 studies were begun to ascertain whether the adjustment of the fluoride content of a public water supply to the optimal level with commercially available fluorides would confer the same caries-inhibitory effects as do waters which carry the same concentrations of fluoride naturally.

Preliminary analysis of the first 4 years is now available on two studies in which the observations were carefully controlled: (*a*) the Grand Rapids-Muskegon-Aurora study (16), and (*b*) the Newburgh-Kingston study (17, 18).

Beginning in January 1945, sodium fluoride was added to the Grand Rapids, Mich., water supply in sufficient quantities to insure continuous maintenance of a level of approximately 1 part per million. In order to establish a base line of dental caries experience prior to fluoridation, 19,680 children with history of continuous residence in Grand Rapids were given a complete dental examination. In addition, 4,291 children were examined in Muskegon, Mich., a city which derives its fluoride-free water supply from the same sources as does Grand Rapids—from Lake Michigan. An additional 5,116 children were examined in Aurora, Ill., where the community water has for years contained 1.2 parts per million of natural fluoride. Data from examinations conducted at Grand Rapids and Muskegon during the autumn of each year since 1945 (that is, five yearly examinations since fluoridation was begun) have been tabulated. These examinations were made on representative children from the kindergarten, first, fourth, eighth, and eleventh school grades. In Grand Rapids, there has been a reduction in caries experience in the permanent teeth of children examined in 1949, particularly in the younger age groups, from the rate expected on the basis of the 1944–45 examinations. The apparent amount of reduction in the decayed-mottled-filled rate per child at ages 6, 9, 13, and 15 years, was approximately 51, 36, 17, and 12 percent, respectively. Concurrently, there has been a slight decline in the caries rates reported by Muskegon with its fluoride-free water supply but it is relatively small and inconsistent: 22 percent in the 6-year-olds and 28 percent in the 7-year-olds. This factor is unexplained. In the 5-, 6- and 7-year-old groups at Grand Rapids, the decayed-mottled-filled rates now approximate those of comparable groups of children in Aurora. Preliminary analyses of the 1950 dental examinations at Muskegon and Grand Rapids indicate that the observed dental caries experience at Muskegon is again similar to that recorded in the 1944–45 base line. At Grand Rapids a further reduction in dental caries prevalence was observed.

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[1] Testimony given during the hearing on the tolerance for fluoride spray residue on apples and pears, held pursuant to the notice issued by the Federal Security Administration, May 1, 1944 (9 F. R. 4654).

In another study, beginning in May 1945, sodium fluoride was added to the water supply of Newburgh, N. Y., to provide a content of 1.2 parts per million, whereas the Kingston, N. Y., supply was and has continued to be fluoride-free. At the end of four years of fluoride treatment of Newburgh's water supply, analysis was made of the data on dental caries experience both of deciduous and permanent teeth of approximately 3,200 school children 5 to 12 years old in Newburgh, and 3,100 children of the same age in Kingston. In brief, the investigators conclude that the decayed-mottled-filled rates among permanent teeth of the 6-to-12-year-old children in Newburgh show a consistent downward trend after 4 years of fluoridation, whereas the decayed-mottled-filled rates in the control city of Kingston show no changes. The reduction in Newburgh is from 20.6 decayed-mottled-filled per 100 permanent teeth to 13.9, or a reduction of 32.5 percent. The rate in Kingston remained at 20.2 decayed-mottled-filled per 100 permanent teeth. Because the first permanent molars are the teeth most affected by dental caries, a special analysis of the condition of these teeth was made. The number of caries-free first permanent molars increased in Newburgh, after four years of fluoride exposure among 6-to-9-years-old children, from 59 per 100 molars to 77. The number of caries-free permanent teeth among Kingston children of the same age remained essentially unchanged.

From these two studies, therefore, it appears that the adjustment of the fluoride concentration to optimal amounts in a water supply previously deficient in this element has resulted in considerable reduction of caries in children. Just how great a reduction may be ultimately effected will have to be determined after a longer period of observation. Reports from other cities which have installed this procedure tend to corroborate the studies mentioned (19–23). Continued observations, however, are essential for the establishment of the degree of effectiveness for higher age groups.

9. In the control studies to which reference was made in the preceding paragraph, sodium fluoride (NaF) was added to the water supplies. If the availability of fluoride ion is the same, the use of sodium silicofluoride (fluosilicate, Na_2SiF_6) should result in considerable savings. Experimental studies indicate that the fluorine in sodium fluoride and sodium fluosilicate produce similar physiological effects upon rats (24), and are equally effective in inhibiting the development of induced dental caries in rats (25). Accordingly, it is inferred that this principle would apply to human experience as well, although it has not yet been demonstrated. Other considerations being equal, for reasons of economy the cheaper material (fluosilicate) is recommended. For smaller public water supplies, however, other factors such as the amount of available space, handling hazards, and equipment preference will determine the choice of the compound used.

10. The statement that fluoridation of water supplies reduces tooth decay by 65 percent is postulated on an expectancy for a population using a fluoride-free water supply. When a public water supply naturally containing 0.4–0.5 parts per million, of fluoride is adjusted to the optimal level (1.0 p. p. m.), the reduction in dental caries prevalence obviously would be less. Upon the basis of information at present available, it is not possible to predict how much reduction of caries will be apparent in the adult population. Other factors—genetic, dietary, bacteriologic, the availability of dental services, and so on—affect the prevalence of caries and vary in every community. Fluoridation is a partial caries-control procedure and does not eliminate the need for other dental health measures.

11. The promotion, initiation, supervision, and proper operation of the fluoridation of public water supplies is a responsibility of the State department of health, acting jointly through its bureau or division of dental health and through the division of public health engineering, with the collaboration of the dental and medical professions. Suitable local plans for dental health surveys before fluoridation and periodic evaluations should be set up by the dental public health program director. These surveys should provide data suitable for calculating an index of caries attack and an index of the frequency and severity of dental fluorosis. Engineering aspects of fluoridation, such as tests to determine the fluoride content of the water, safety provisions, and training of operators, should be covered by State regulations. The statement of policy and procedure formulated by the American Water Works Association will be acceptable to most State departments of health (26). Municipalities contemplating the installation of fluoridation should look to the State health department for expert guidance. Many small communities would be unable to maintain satisfactory fluoridation practice without assistance. There are many so-called auto-

matic plants applying chlorination, which allegedly do not require full-time attendance of a waterworks operator. Many have very limited laboratory facilities or lack technical personnel to make accurate chemical determinations of fluoride content. Ultimately, State or regional laboratories will have to take over routine chemical examination of samples along with established bacteriological control. Provision for periodic visits by a State sanitary engineer cannot be considered adequate supervision.

SUMMARY AND CONCLUSIONS

Under normal conditions of living, fluorine is a trace element in human nutrition. A variable and important source of it is drinking water. Many of the public water supplies in the United States are deficient in this element. Children who depend upon such supplies have a high dental-caries-attack rate compared with children living in cities having water supplies containing approximately 1 parts per million of fluoride. The advantage of the latter group is considerable and amounts to one-third to one-half as much caries. The caries-preventive effect of adequate fluoride intake is principally conferred upon children until approximately the twelfth year of life—the period during which dentine and enamel of the permanent dentition are being formed. This increased resistance to dental caries is carried over into later life to an appreciable degree.

The results of experimental studies conducted in the laboratory give consistent support to the concept of the inhibitory effect of fluoride on the caries process. There is a safe margin between trace quantities in drinking water which are required for optimal dental health and that amount which produces undesirable physiological effects. The most sensitive indication of the latter amount is interference with normal calcification of the teeth which is manifest in mottled enamel, or endemic fluorosis. This effect, although compatible with caries-resistant tooth structure and, within certain limits, with apparent physiological well being, is esthetically undesirable. The level of fluoride concentration in drinking water that is associated with the appearance of mottled enamel varies with individual susceptibility and with the amount of water consumed. The upper level of safety has been reached, in the northern part of the United States, in domestic water supplies containing approximately 1.0–1.5 parts per million fluorine and, in the Southern part of the country, with supplies containing approximately 0.7 parts per million.

There is no reason to believe that prolonged ingestion of drinking water with a mean concentration below the level causing mottled enamel will have an adverse physiological effect. Progress reports in several communities in which sodium fluoride has been added to the water supplies of low fluoride content indicate that this procedure will reduce the caries-attack rate in children. There is evidence to suggest that it will confer an appreciable measure of protection to their teeth after they have become adults.

In view of these considerations, this committee recommends that any community that has a child population of sufficient size and obtains its water supply from sources which are free from or are extremely low in fluorides should consider the practicability and economic feasibility of adjusting the concentration to optimal levels. This adjustment should be in accordance with climatic factors, and a constant chemical control should be maintained. With proper safeguards, this procedure appears to be harmless. However, it should be conducted under expert dental and engineering supervision by the State board of health. It should not be undertaken unless this supervision can be provided.

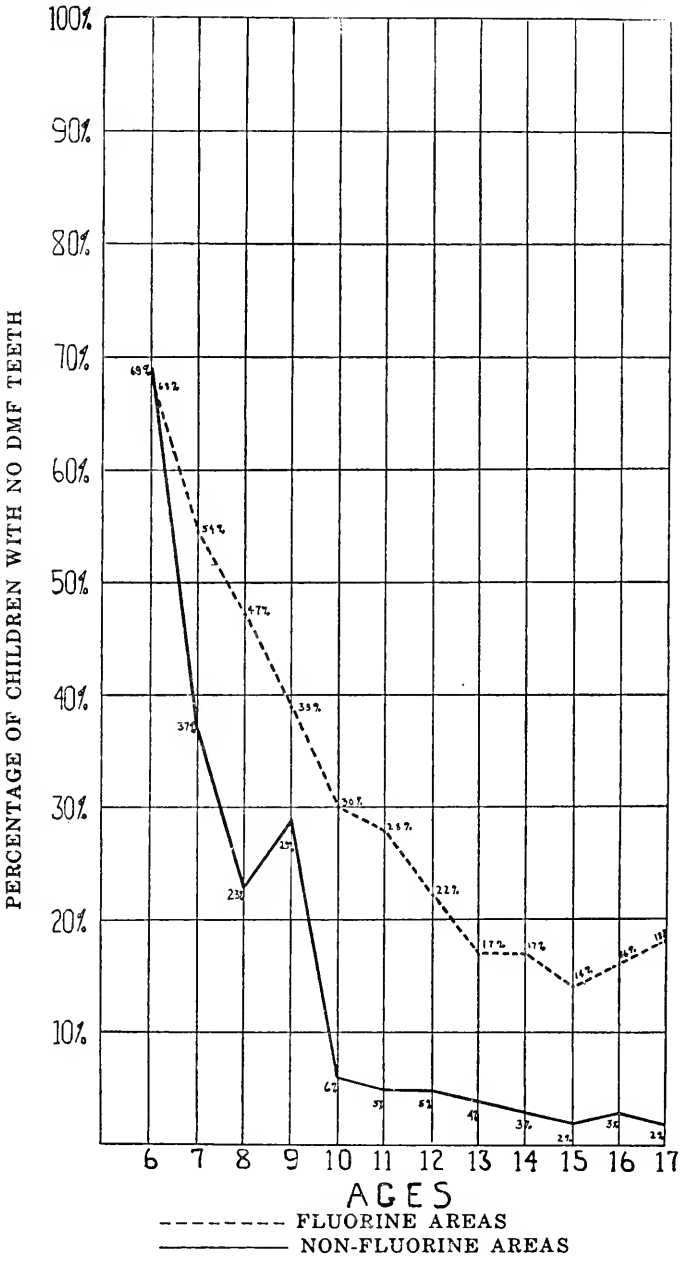
The degree of reduction in the prevalence of caries that will actually be realized in a particular community will vary according to local conditions. The procedure will supplement but not supplant other dental health measures. Approximately one-half of the population of this country is living in small villages and rural areas and will not benefit by fluoridation of public water supplies.[2] Other provisions for preventing dental caries in this fraction of the population should be continued and developed.

[2] To prevent misinterpretation of this statement, it may be necessary to point out that, upon the basis of the 1950 census, about one-third of the Nation's population does not have public water-supply service. It was the opinion of the committee, when writing the report, that in some communities where a public water supply exists, the child population might be so small and the ability to provide competent control of fluoridation so unlikely, that for the present at least, it should be assumed that one-half of the population is beyond the reach of communal fluoridation of the water supply.—Ed.

Illustration 2 presents graph of data in Table IV.

Illustration 2

PERCENTAGE OF CHILDREN (AGE 6-17) HAVING NO DMF TEETH IN FLUORINE AND NON-FLUORINE AREAS—1944



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Discussion of Data

It would appear from a careful analysis of the data presented here that the superior dental conditions found in the children residing in the fluorine areas before and after the second birthday were not due to chance.[3] Other variables call for further investigation, for example, the geographical location of children. Most of the data in the nonfluorine areas presented in this article were obtained in the northern part of the State, while the children in fluorine areas were in south Jersey. The bureau of dental health will obtain more data of dental conditions among the children in nonfluorine areas in south Jersey. The findings will be published later. Also the bureau hopes to conduct continuous dental programs in the fluorine areas to investigate dental conditions among the total population having had the benefit of fluorine over long periods of time.

The University of Rochester,
School of Medicine and Dentistry,
Rochester, N. Y., May 25, 1954.

Hon. Charles A. Wolverton,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D. C.

Dear Sir: This letter is written to voice my opposition to the so-called Wier bill, H. R. 2341, "A bill to protect the public health from the dangers of fluorination of water."

My background in fluorine studies dates from 1939 with the publication of observations on certain biological effects of fluorides in experimental animals. Since that time I have studied and published reports concerned with biological effects of fluorides especially those having to do with dental caries, with the toxic effects of fluorides, and with the safety of water fluoridation.

My education in science has led to the granting of a bachelor of science degree in 1925 from Illinois Wesleyan University, master of science degree and Ph. D. from the State University of Iowa in 1927 and 1930, respectively. In 1949 a doctor of science honoris causa was given to me by my alma mater, Illinois Wesleyan University.

During the years 1931 and 1937 I served as a Rockefeller senior fellow and then as assistant professor of dentistry (biochemistry) in the School of Medicine and dentistry, University of Rochester. During this time I studied the physical and chemical properties of teeth and bones. From 1937 to 1946 I was assistant professor and associate professor of biochemistry and pharmacology. In 1946 I become professor of pharmacology and toxicology. Since 1937 I have been continuously engaged part time as a consultant toxicologist for a number of industrial companies. Beginning in the spring of 1943 when the Manhattan Project established a research project at the University of Rochester, I have held the

[3] Statement supported by chi square determinations.

title of chief pharmacologist. In the course of this work I was among those present at the Bikini tests in July 1946. Our work for the Manhattan Project, and since January 1, 1947, for the Atomic Energy Commission, has involved studies of the toxicity of fluorine, of uranium, of beryllium, and of other elements and compounds of especial interest to the AEC. My duties have included supervision of inhalation toxicity tests, oral toxicity tests, skin and eye toxicity tests, and studies of the mechanism and therapy of poisoning. At present I am chairman of the technical advisory committee on the fluoridation of water supplies of the State of New York Department of Health. I am also chairman of the Committee on Toxicology of the Division of Chemistry and Chemical Technology of the National Research Council.

I am a member of the American Society of Pharmacology and Experimental Therapeutics, the American Society of Biological Chemists, the American Chemical Society, the Society for Experimental Biology in Medicine, the American Industrial Hygiene Association, the International Association of Dental Research, the American Association for the Advancement of Science, and the Kansas, New York, and Rochester Academies of Science. I am the author of more than 100 papers on various subjects mostly in the fields of biochemistry, pharmacology and toxicology and the coeditor with Dr. Carl Voegtlin of a monograph in 4 volumes on the Pharmacology and Toxicology of the Uranium Compounds.

I wish to oppose the proposition put forward by the bill known as the Wier bill, H. R. 2341, a bill to protect the public health from the dangers of fluorination of water. This bill attempts to set up conditions that would prohibit the use of fluorides in the community drinking water supply. I wish to include as a part of my statement a report of the Food and Nutrition Board entitled "The Problem of Providing Optimum Fluoride Intake for Prevention of Dental Caries," Publication 294 of the Division of Biology and Agriculture, National Research Council. In the summary and conclusions of this report on page 13, item 5 is as follows: "The adjustment of the fluoride content of drinking water to 1 part per million fluoride is in principle and in practice the soundest and most effective approach to caries prevention on a large scale known today." The benefits of fluoridating water supplies have been proven. These benefits are so great that the only grounds that would justify the prohibition of the use of fluoride in drinking water is the demonstration of an injury or the hazard of an injury to the health of the users of such water.

Whenever a proposal is made to fluoridate the water supply of a community a critical question—is it safe?—is always raised. My opinion can be given: All of the available evidence indicates that there is no danger in water fluoridaton. To answer this question completely would require a much longer discussion than can be given here. The main points of reference, however, can be cited. Dr. Frank A. Smith of this Department and I have recently summarized the important clinical effects of fluorides in 4 categories; 3 of these are toxic effects and the fourth is the use of fluorides in preventive dentistry.

Category	Dose frequency	Amount	Time	Clinical effect
Acute poisoning	Single	5 to 10 grams	2 to 4 hours	Death.
Chronic high grade poisoning.	Daily	20 to 80 milligrams or more.	10 to 20 years	Crippling fluorosis.
Chronic low grade poisoning.	do	2 to 8 milligrams or more.	Daily during 1st 8 years of life.	Mottled enamel.
Preventive dentistry	do	1 to 1.5 parts per million in water.	1st 8 years and later	Decreased dental caries.

Acute toxicity factor of safety in water fluoridation.—For a number of reasons it is difficult to make a reliable estimation of the minimum amount of fluoride that will certainly cause death in a human adult. Nevertheless it may be stated with a high degree of probability that a retained dose of 5 to 10 grams of sodium fluoride will be lethal. When this figure is compared with the 1 milligram ingested daily by an adult who drinks a quart of fluoridated water (1 part per million), an acute lethal effect is clearly seen to be impossible. A factor of safety of 2,500 to 5,000 fold is established. In a child the safety factor may be estimated at 250 to 500 fold.

Occasionally the question is raised whether an accidental addition in a water-treatment plant (for example dumping a day's supply of fluoride into the water in an instant) might produce dangerously high concentrations. A little arith-

metic will provide a reassuring answer. If a day's supply were delivered over a period of an hour the water would contain only 24 parts per million; this amount might be taken daily for 10 years without serious difficulty. Furthermore for a city like Rochester, N. Y., to add to the water supply a sufficient amount to be acutely toxic, that is deadly, a total of 400 tons of fluoride would have to be added to the volume of water distributed daily to the city. The machine in Rochester that adds fluoride to the water has a hopper that contains 1,000 pounds; an acute poisoning is mechanically impossible.

Chronic high-grade poisoning, crippling fluorosis, factor of safety in water fluoridation.—Among the prominent toxic effects observed after long continued exposures, that is 10 to 20 years, to large amounts of fluoride (20 to 80 milligrams per day or more) are abnormalities of the skeleton. This comparatively rare disorder has been observed in a few men who worked in a dusty fluoride industry; the reported cases mostly have come from foreign countries. Skeletal changes of lesser severity have been observed in 13 of 114 residents of Bartlett, Tex., where the drinking water contained 8 parts per million. These 13 persons were described as showing some osteosclerosis. This term is applied to an increased resistance to the passage of X-rays. None of these 13 persons reported any disability or illness from the increased density of their bones. A survey of approximately 140 residents of communities in which the drinking water contained 2 or 3 parts per million of fluoride revealed that not 1 person had any detectable skeletal changes. Between the amount of fluoride that will produce osteosclerosis in humans and the amount obtained by drinking fluoridated water (1 part per million of fluoride), there is a safety factor of 8 to 20 fold.

Doses producing enamel hypoplasia or mottled enamel, factor of safety in water fluoridation.—Detectable enamel hypoplasia or mottled enamel in the human is endemic in areas where the drinking water contains 2 to 5 parts per million or more. In these populations there is no other known toxic effect of fluorides; mottled enamel is therefore the most delicate index of fluorosis.

It should be emphasized that the condition of mottled enamel can be produced only during the years that the enamel organ is functioning; that is, only when the tooth is being formed in the jaw and preceding eruption, can the changes occur which later appear as mottled enamel. There is an extraordinarily precise relation between the severity of dental fluorosis and the amount of fluoride in the drinking water. The evidence on which this statement is based comes from the extraordinarily fine epidemiological surveys of Trendley Dean and his colleagues. On the basis of the available evidence from human studies a two-fold factor of safety exists between levels of fluorides producing detectable mottled enamel even in a few individuals and a level of 1 part per million. Although the margin of safety for mild mottling is only twofold, this safety factor is established firmly.

Considerations of the metabolism of fluorides in the body increase our conviction of the safety of water fluoridation. The body possesses two potent detoxification mechanisms: (1) Rapid excretion in the urine; (2) rapid storage in the skeleton. Deposition in bone mineral although it increases the content of fluoride in the bdy is harmless in itself and is not permanent; mobilization and excretion continuously remove fluoride. Even if all the fluoride ingested in the drinking water (1 part per million) in a lifetime were stored in the skeleton, no injury would thereby accrue.

The ultimate proof of the safety of water fluoridation is the good health of populations drinking fluoride-containing water. At present the most extensive information comes from the Newburgh-Kingston study based on the exceptionally detailed pediatric study in which more than 500 children in each city have been examined annually in a program that has now (spring of 1954) been in existence nearly 9 years, it has been concluded that no deleterious systemic effects have occurred. The relatively few observations from fluoride and nonfluoride areas by which it is possible to compare height, body weight, bone fracture experience and death rates from heart disease, cancer, and nephritis consistently show no ill effects (save mottling of the enamel from excessive amounts of fluorides).

Conclusion.—Considering all the available evidence it is my opinion that the health hazards do not justify postponing water fluoridation.

I request that this statement be made a part of the record of the hearing.

Yours truly,

HAROLD C. HODGE,
Professor, Pharmacology and Toxicology.

[Publication 294, Division of Biology and Agriculture, National Research Council, November 1953]

The Problem of Providing Optimum Fluoride Intake for Prevention of Dental Caries

A report of the Committee on Dental Health of the Food and Nutrition Board, prepared by the Subcommittee on Optimum Fluoride Levels—R. F. Sognnaes, Chairman, F. A. Arnold, Jr., H. C. Hodge, O. L. Kline

THE FOOD AND NUTRITION BOARD

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FOREWORD

The Food and Nutrition Board in the spring of 1953 appointed a subcommittee under the committee on dental health "to study the problem of providing an optimum amount of fluoride in the American diet including the water supply." The subcommittee members were F. A. Arnold, Jr., D.D.S., Director, National Institute for Dental Research, National Institutes of Health, Bethesda, Md.; H. C. Hodge, Ph.D., professor of pharmacology, University of Rochester, School of Medicine and Dentistry, Rochester, N. Y.; O. L. Kline, Ph.D., Director of Research, Division of Nutrition, Food and Drug Administration, Washington, D. C.; and R. F. Sognnaes, D.M.D., Ph.D., professor of oral pathology, Harvard School of Dental Medicine, Boston, Mass. (chairman). G. B. Forbes, M.D., associate professor of Pediatrics, University of Rochester, School of Medicine and Dentistry, Rochester, N. Y., and F. J. Stare, M.D., Ph.D., professor of nutrition. Harvard School of Public Health, Boston, Mass., have cooperated in preparing this report, without formal appointment to the committee.

The text of this report will include discussion of (I) the magnitude of the caries problem compared with conventional approaches to prevention, (II) the efficacy and safety of fluoridation, (III) the vehicles for fluoridation, and (IV) summary and conclusions.

By way of definition the committee presents the following general statement in regard to its understanding of the term "optimum amount of fluoride":

Fluorides are universally present in the earth's soil, its plants, and animals, including man. No one has so far been able to produce a fluoride-free diet, human or animal. Hence, while a certain amount of fluoride is obviously compatible with normal health, the minimum fluoride level conducive to optimal general health has not been determined.

The optimum level of fluoride intake must at this time be defined as that which in epidemiological and clinical observations has been found to combine the highest degree of caries protection with the lowest degree of mottled enamel. This level refers to the added amount of fluoride derived from drinking water containing or adjusted to contain 1 part per million of fluoride, assuming a basic dietary fluoride intake from average American foods which is relatively low but not necessarily constant or unchangeable. This fluoride level, while optimal for caries prevention, is higher than would appear necessary to satisfy standard references of adequate nutrition, such as reproduction, growth, and general health. Thus, while there does appear to be an optimum level of fluoride intake as a practical means of caries prevention, information is lacking at present to take into consideration the possibility of other beneficial effects.

I. THE MAGNITUDE OF THE CARIES PROBLEM VERSUS CONVENTIONAL APPROACHES TO ITS PREVENTION

During recent centuries, the civilized world has seen an alarming increase in the prevalence of dental decay (Krikos, 1935). A longitudinal survey made in this country gives no indication that this upward trend in the incidence of decay has leveled off during the last few decades (Brekhus, 1951).

In terms of dollars and cents, the United States Department of Commerce has recently reported that the total annual personal expenditure for dental care in the United States is above $1 billion. Although enrollment in the Nation's 42 dental schools has increased almost 50 percent during the last decade, it is generally estimated that only 25 percent of the actual dental needs are met through conventional dental care by the Nation's 80,000 dentists and, hence, that their number would have to be quadrupled if existing dental defects were to be remedied. According to a recent survey (Moen, 1953), the suffering from untreated decay, while practically universal, is particularly widespread in the lower income bracket. Under these circumstances it would clearly be a major contribution to the conservation of human resources if a method of caries prevention could be developed which would reach the major part of the population.

Because the most widely accepted concept of caries attributes the disintegration of the teeth to agents contributed by the oral environment, the major effort toward caries prevention has, during the present century, been directed toward the elimination of the oral microorganisms, their substrate, and their products. While there is much evidence that these factors play an important role in the etiology of dental caries, the present prevalence of the disease, referred to above, indicates that our efforts to apply this theory in pracitce have not succeeded in reversing the upward trend of caries. The paradoxical situation now exists where the United States population spends, in addition to the tremendous cost of dental restorations, very large sums on so-called therapeutic dentifrices. Besides being effective, the ideal caries-preventive method should to the greatest possible extent conserve the time, the cost, and the efforts of the individual, and at the same time present no health hazard in its application.

II. THE EFFICACY AND SAFETY OF FLUORIDATION

Reports now available indicate that for the general population the fluoridation of public drinking water is more effective than any other known procedure in preventing dental decay (see table 1). Over 15 million people in about 900 United States communities are now served by public water supplies supplemented with 1 part per million fluoride. At the same time there are as many communities, covering more than 3½ million people, using water supplies which by nature are provided with a fluoride content of 1 part per million fluoride and over. On the strength of these and other data, it may now be considered as proved that increasing the fluoride content of community water supplies to an optimal level has a caries-preventive effect comparable to that observed in communities with naturally fluoridated water. Furthermore, it is becoming evident that the maximal caries-preventive effect of fluoride is provided to those children receiving optimal amounts of fluoride during the time the teeth are in the formative stage; that is, the period between infancy and adolescence. Additional evidence is accumulating which suggests that beneficial effects are also obtained in teeth already erupted in older children and that the benefits extend into adult life. While all teeth contain some fluoride, the amount depends upon the fluoride intake (McClure and Likins, 1951), primarily during the period of tooth development. The fluoride is probably deposited in the mineral of the dental hard tissues in exchange for hydroxyl ions in the apatite lattice, giving a fluorapatite crystal or a mixed fluor-hydroxyl apatite crystal.

A number of biological effects of fluorides have been described (McClure, 1946). Some of the specific actions have been studied in sufficient detail to serve as a basis for a quantitative estimation of the metabolism and storage of fluorides.

Acute lethal poisoning from inorganic fluorides has been reported in 60 cases reviewed by Roholm in 1937, since which time Smith, Hodge, and Cox (1953) have compiled a report on a total of 77 deaths attributed to fluorides. It is probable that for the adult a retained dose of 5 to 10 grams of sodium fluoride will be lethal. When this figure is compared with the 1 milligram ingested daily by an adult who drinks a quart of fluoridated water (1 part per million of fluoride), a factor of safety of twenty-five hundred- to five thousand-fold is estab-

lished. In a child, the safety factor may be estimated at two hundred and fifty- to five hundred-fold. With water as a vehicle and the concentration at 1 part per million fluoride, fatal poisoning from drinking such water is impossible.

Growth retardation in children as the result of fluoride exposure has not been reported. In several species of animals— mouse, rat, rabbit, guinea pig, chicken, dog, swine, sheep, goat, cattle, and monkey—rations containing less than 100 parts per million, consumed for periods of a year or less, were reported to have no deleterious effect on growth. Rabbits were found to grow normally on a ration at the 200 parts per million fluoride level, swine at the 300 parts per million level. In contrast, dogs, calves, chicks, sheep, and monkeys exhibited growth retardation when given rations containing 100 to 125 parts per million fluoride or more. If these results are applicable to the caries-preventive level of fluoride in man, the factor of safety against growth retardation is fifty- to one hundred-fold.

Skeletal changes are among the prominent chronic effects observed after long-continued exposures to large amounts of fluoride (20 to 80 milligrams per day or more). These abnormalities of the skeleton manifest themselves as osteosclerosis, osteoporosis, and exostoses of the long bones and of the vertebra, pelvis, jaw bone, and other flat bones; with somewhat smaller amounts, yet many times the 1 part per million of water fluoridation, minor alterations in bone architecture, e. g., thickening of trabeculae, have been reported.

TABLE 1.—*Fluoridation study projects*

Community	Fluoridation		Age group (years)	Reduction in decay [1] (percent)
	Date started	Report period (years)		
Grand Rapids, Mich [2]	January 1945	8	6	70.8
			7	52.5
			8	49.2
			9	48.1
			13	39.7
Brantford, Ontario, Canada [3]	June 1945	7	6	59.4
			7	69.5
			8	51.5
			9	46.2
			13	32.9
Newburgh, N. Y [4]	May 1945	7	6	69.4
			7	67.8
			8	40.4
			9	51.4
Evanston, Ill [5]	February 1947	4	6	73.6
			7	56.4
			8	35.4
Sheboygan, Wis [6]	February 1946	6	[7] 9–10	35.3
			[8] 12–14	29.7

[1] DMF permanent teeth.
[2] Arnold, F. A., H. T. Dean, and J. W. Knutson. Unpublished data from 8th Year of Grand Rapids-Muskegon Study. Obtained from Grand Rapids 1952 data.
[3] Hutton, W. L. Personal communication to committee member, Feb. 2, 1953.
[4] Ast, D. Personal communication to committee member, including mimeographed data from 1952 examinations.
[5] Hill, I. N., J. R. Blaney, and W. Wolf. The Evanston Dental Caries Study. J. Dental Research 31: 346–353. 1952.
[6] Bull, F. A. Personal communication to committee member and material obtained from Wisconsin State Board of Health, November 1952.
[7] 4th grade.
[8] 8th grade.

In a recent report on the medical aspects of fluorosis in Bartlett, Tex., where the drinking water contained 8 parts per million fluoride (Shimkin, Arnold, Hawkins, and Dean, 1953), there was a great similarity between the high-fluoride group and the control group with respect to the number and types of disease symptoms elicited in the medical histories. There was, as would be expected, a high incidence of mottled enamel and an increased bone density in the spine and pelvis. However, the greater incidence in the high-fluoride group of a certain brittleness and blotching of the fingernails, of hypertrophic changes in the spine and pelvis, and of lenticular opacities of the eye requires further epidemiologic investigation, in view of the fact that the fluoride level in this community was eight times above that recommended for fluoridation.

From animal studies it appears that the factor of safety between amounts producing skeletal changes and amounts that would be taken in when the drinking water contains 1 part per million is about fiftyfold. Between the amount of fluoride that will produce osteosclerosis in humans and the amount obtained at the caries-preventive level (drinking fluoridated water containing 1 part per million fluoride), there would appear to be a safety factor of eight- to twenty-fold.

Mottled enamel is the most delicate index of chronic fluorosis. In man, mottled enamel is endemic in areas in which the drinking water contains 2 to 5 parts per million fluoride or more. In these populations there is no other known toxic effect of fluoride.

It should be emphasized that this effect of fluoride can only be produced during the years that the teeth are developing. Once teeth have erupted into the mouth, enamel mottling cannot occur. There is a precise relation between the severity of mottling and the logarithm of the parts per million fluoride in the drinking water. The intersection of the line which relates the index of mottling to the fluoride intake and the line which relates caries to fluoride intake occurs at 1 part per million; this concentration therefore has the significance of maximal tooth health with minimal hazard. On the basis of the available evidence from human studies, this caries-preventive level allows for a twofold factor of safety against mottled enamel.

The statistical distribution of mottling shows that the incidence of mottling is a dosage-response phenomenon analogous to the dosage-response relationship observed in classical pharmacology. The more fluoride present in the water supply, the more severe the mottling, with the usual biological range in the individualized response.

Excretion and storage.—The outstanding characteristics of the urinary excretion of fluoride are rapidity and selectivity. It has been found, for example, that normal human adults from a nonfluoridated community, given a dose of 1.5 milligrams of fluoride as NaF dissolved in a glass of water, will excrete approximately one-third of it in 3 hours (Smith, Hodge, and Cox, 1953), and this represents the greater portion of all that will be excreted. One-third to one-half of the fluoride absorbed into the body fluids is rapidly deposited in the skeleton (McClure, 1946; Savchuck and Armstrong, 1951) which depletes fluoride ion from the circulation as effectively as does urinary excretion and thus may be classed as a detoxification mechanism.

Although the available evidence is not in complete agreement, it appears that fluoride storage in the skeleton increases during continuing fluoride exposure, viz, at a constant level. The fluoride is deposited in the bone mineral, hydroxylapatite, and, since fluorapatite is isomorphous (Bale, 1940), there is no evidence that the fluorapatite crystal is nonphysiological or fails to function as does hydroxylapatite. There are instances reported in which animals given fluoride for long periods of time and in large amounts produced bone with percentages of fluoride as great as 2.4 (Maynard, Voegtlin, and Hodge, 1953); i. e., 24,000 parts per million. If it is assumed that one-third to one-half of the fluoride is deposited, it can be calculated that at the age of 70 years an individual drinking fluoridated water (1 part per million) would have in his skeleton 3,000 to 4,000 parts per million fluoride, compared to the 1,500 parts per million found in 70-year-old residents of Rochester with a minimal fluoride intake.

Fluoride, once deposited in the skeleton, is by no means permanently fixed but may be mobilized into the body fluids as a fluoride ion. Largent (1953) followed the excretion from his own skeleton following the deposition of a total of 1.7 grams of fluoride. There were two phases to the loss of fluoride: (1) a rapid one of perhaps a month's duration, and (2) a slow process following a linear course for at least 2 years (Smith, Hodge, and Cox, 1953). The mobilization of fluoride from the skeleton and its excretion from the body constitute a safety mechanism tending to maintain the total amount of fluoride in the body at a low level. Present knowledge, therefore, fails to indicate any health hazard associated with the extra deposition of fluoride in the skeleton that will undoubtedly accompany water fluoridation.

The results of the careful and controlled physical examinations of the Newburgh-Kingston children give to date a clean bill of health to water fluoridation under the conditions of this test (Schlesinger, Overton, and Chase, 1953). Comparing Newburgh children with those in Kingston, the control city, the blood picture is normal, urine analyses are negative, the condition of nails, skin, and hair is entirely comparable, the results of the eye and ear examinations are similar, and no detectable difference was found in bone density in children in

the two cities studied. The results so far have thus revealed no deleterious systemic effects from the ingestion of fluoride in drinking water at the level employed. Furthermore, in areas of the country where drinking waters are naturally fluoridated, large population groups have been exposed for generations with no readily evident ill effects save mottling of the enamel when more than 2 parts per million of fluoride is present.

After evaluating the effect on the general health of populations in 22 cities with and without small amounts of fluoride in the drinking water, the Department of Public Health of the State of Illinois concluded: "Mortality statistics show that there is no significant difference in the general death rates between areas where fluoride is present and those where it is absent. Similarly, there is no significant difference in the risk of death from specific diseases such as heart, cancer, nephritis and diabetes."

From the above considerations it would appear (1) that the possibility of acute fatal poisoning resulting from fluoridation is nil, (2) that children drinking fluoridated water will grow normally, (3) that no detectable alterations will occur in bone structure at the recommended level of 1 part per million, and (4) that there is at least a twofold factor of safety in the matter of mottled enamel, a response which in large groups of children and in numerous communities has been so mathematically related to dosage that the prediction can be made with confidence that unesthetic mottling will not be seen with 1 part per million.

III. VEHICLES FOR FLUORIDATION

The type of vehicle suitable for the administration of fluoride must provide a safe and effective means of reaching the population most concerned; namely, children from infancy to adolescence. Using the data of McClure (1943) as a guide (see table 2) the object should be to supplement the usual fluoride ingestion with approximately 0.5 milligram fluoride per day in the 1- to 3-years-olds, 0.7 in the 4- to 6-year-olds, 0.9 milligrams per day in the 7- to 9-year-olds, and 1.1 milligrams per day in the 10 to 12-year-olds (see tables 2 and 3). An ideal vehicle should be such that its consumption would tend to be self-limiting; in other words, the capacity of a child of a given age to consume the vehicle should not exceed the limit of a safe fluoride intake. At the same time, the nutritive value, the usage, and the cost of the vehicle should be advantageous to the largest part of the population. Finally, the vehicle should be such that there would be uniformity of response and ease of regulatory control, especially since other sources of fluoride may already be available. The fluoridation of communal water supplies meets these qualifications. But if supplementary fluoride through other vehicles is to be attempted it is imperative that the fluoride content of the individual water supply, as well as that available in common foods, be determined.

Fluoride content of food.—The most extensive literature surveys now available on fluoride occurring naturally in food are those prepared by McClure, published in 1939 and in 1949. In the latter report, he refers to 41 publications used as source material. More than 130 foods are listed. The majority of foods such as vegetables, meats, cereals, and fruits found in the average diet contain from 0.2 to 0.3 part per million of fluoride in the foods as consumed. Notable exceptions to this range are seafoods and tea. Seafoods are shown to contain 5 to 15 parts per million fluoride as consumed, and tea from 75 to 100 parts per million fluoride on the dry basis. (A cup of tea will supply approximately 0.12 milligram fluoride.) Exclusive of drinking water, the average diet in the United States is calculated to provide 0.2 to 0.3 milligram of fluoride daily.

In a survey by Ham and Smith (1950) of dietary fluoride consumed in Toronto, the food-borne fluoride was found to range from 0.18 to 0.30 milligram each day. These values for a limited Canadian area are in good agreement with the averages stated by McClure.

No important difference was found between the fluoride content of diets consumed in Cincinnati and in Arizona, two widely separated areas. Clifford (1945) observed that wheat grown in Deaf Smith County, Tex., a high-fluoride water area, did not have a fluoride content significantly higher than wheats grown in other areas. Armstrong and Knowlton (1942) measured the fluoride content of diets used in the Minnesota General Hospital and found that the average fluoride intake from such diets ranged from 0.27 to 0.32 milligram per day. McClure (1943) surveyed the fluoride intake of children 1 to 12 years old and calculated that their food contained from 0.1 to 1 part per million of fluoride on a dry-

weight basis and that children in the age range studied had a fluoride intake that varied from 0.03 to 0.56 milligram of fluoride daily. He pointed out that foods highest in fluoride, seafoods and tea, do not usually occur in appreciable quantities in children's diets.

TABLE 2.—*Method of estimation of daily intake of fluoride from food containing 0.1 to 1 part per million of fluoride in the dry substance* [1]

Age (years)	1 to 3	4 to 6	7 to 9	10 to 12
Energy allowance (calories)	1,200	1,600	2,000	2,500
Water requirement (cubic centimeters)	1,200	1,600	2,000	2,500
Total dry substance in daily food allowance when 1 gram of dry substance of the food furnished 4.5 calories of energy: Total daily intake of dry substance (grams)	265	355	445	555
Fluoride ingested daily in food in which the dry substance of the food contained the following concentrations of fluoride:				
(*a*) 0.10 parts per milligram (milligrams)	0.027	0.036	0.045	0.056
(*b*) 0.20 parts per milligram (milligrams)	0.053	0.071	0.089	0.111
(*c*) 0.50 parts per milligram (milligrams)	0.133	0.178	0.223	0.278
(*d*) 1 part per milligram (milligrams)	0.265	0.360	0.450	0.560

[1] Abridged from McClure, F. J.: Am. J. Diseases Children 66: 365, table 3, 1943.

TABLE 3.—*Summary of estimated daily intake of fluoride from food and from drinking water (drinking water containing 1 part per million of fluoride and dry substance of food containing 0.1 to 1 part per million of fluoride)* [1]

Age (years)	Body weight [2] kilograms	Daily fluoride intake			
		From drinking water, milligrams	From food, milligrams	Total from food and drinking water, milligrams	Total as milligrams per kilograms of body weight
1 to 3	8 to 16	0.390–0.560	0.027–0.265	0.417–0.825	0.026–0.103
4 to 6	13 to 24	0.520–0.745	0.036–0.360	0.556–1.105	0.023–0.085
7 to 9	16 to 35	0.650–0.930	0.045–0.450	0.695–1.380	0.020–0.068
10 to 12	25 to 54	0.840–1.165	0.056–0.560	0.866–1.725	0.016–0.069

[1] Cited from McClure, F. J.: Am. J. Diseased Children 66: 368, table 5, 1943.

[2] Figures for weight for ages 1 to 6 years were taken from tables arranged by Woodbury (Woodbury, R. M., Statures and Weights of Children Under Six Years of Age, publication 87, U. S. Department of Labor: Children's Bureau, 1921); figures for 6 to 12 years were taken from the Baldwin-Wood weight-height-age tables for boys and girls of school age, published by the American Child Health Association.

Lawrenz and Mitchell (1941) found that rats assimilated 20 percent more fluoride from water than from food. McClure (1949) observed later that when the animals followed normal eating habits there was no difference in fluoride assimilation from the two sources.

The method of fluoride assay most widely used for food analysis is that of Willard and Winter, a modification of which was studied collaboratively by Clifford (1945) and appears in the Association of Official Agricultural Chemists Book of Methods. This method is not reliable for food products that are high in silica, which inhibits the extraction of fluoride. Additional analytical data are needed to establish further the reliability of average food fluoride values and their application in specific areas throughout the country.

Fluoride supplement to food.—Whereas there is a reasonably satisfactory regulation of the total intake of fluoride from drinking water containing 1 part per million of fluoride, there is as yet no control study to indicate that fluoride added to other items of the diet would be self-limiting and self-regulatory in the same way. Furthermore, in view of the already existing practice of fluoridating communal water supplies, it is imperative to bear in mind the possibility that fluoride addition to other food items might become the source of excessive increments of the individual fluoride intake. However, assuming that fluoride-supplemented food could reach populations in a controlled manner, the three categories listed below (from Hodge and Smith, 1953) may be considered for the purposes of this study as points of reference in evaluating the hazard of such potential vehicles.

Category	Dose frequency	Amount of fluoride	Time	Clinical effect
Chronic high-grade poisoning	Daily	20 to 80 milligrams or more	10 to 20 years	(Crippling) skeletal fluorosis.
Chronic low-grade poisoning	do	2 to 8 milligrams or more.	Daily during first 8 years of life.	Mottled enamel.
Preventive dentistry	do	1 to 1.5 milligrams	First 8 years primarily.	Decreased dental caries.

One might add a fourth category, acute fatal poisoning, even though it is difficult to see how any proposed scheme could provide enough food fluoride to make a fatal outcome possible. As an example, one may assume that fluoride is added to table salt in amounts sufficient to provide an additional 1 milligram of fluoride daily. Two milligrams of NaF contain 1 milligram of fluoride; assuming a daily intake of 10 grams of NaCl, the salt would contain 0.02 percent NaF. To obtain 2,500 milligrams of fluoride, possibly a fatal dose, it would be necessary to ingest 2,500×10 grams, or 25 kilograms of salt, which is clearly impossible. Similar calculations can be made for the amounts of fluoride that might be taken in if the fluoride were added to other foods. Fatal poisoning is out of the question.

Furthermore, if the amount of fluoride that might produce crippling fluorosis in 10 to 20 years is calculated, the indicated daily intake of NaCl would be over 200 grams; this is out of the question. If the 8 parts per million level is taken as a plus or minus zone for skeletal changes, there is no cause for disquietude, because an intake of 80 grams of salt per day is also unthinkable. It is probable that no symptoms of chronic high-grade poisoning would ever appear, no matter how many items of the diet contain added fluoride at the recommended level. In addition, since a person drinking fluoridated water may be assumed to ingest only about 1 milligram per day from this source, adding fluoridized foods to the diets in these communities would not be expected to give rise to any symptoms of chronic high-grade poisoning.

The development of mottled enamle is, however, a potential hazard of adding fluorides to food. The total daily intake of fluoride is the critical quantity. The use of fluoridated salt, for example, with the simultaneous use of fluoridated water, might easily provide amounts of fluoride in excess of the recommended level. Foods processed with fluoridated water could become an additional source of extra fluoride unless the total concentration from all sources is considered and kept within the recommended level. Consideration of the normal variations in the intake of various types of food at various ages is basic to this problem.

While a considerable amount of information is available regarding the average caloric intake and the consumption of specific nutrients among American individuals and family groups, our concern here is primarily to consider quantitative data on the consumption of specific food items by children from infancy to adolescence. On this point the literature appears to be very limited. One resource for such information has been located in the longitudinal group study which has been going on at the Department of Maternal and Child Health of the Harvard School of Public Health for the past two decades, but so far this material has primarily been calculated with respect to specific nutrients, such as protein, calcium, etc., because of their more immediate scientific interest. The most extensive recent study pertinent to the discussion appears to be that of Widdowson (1947), which is concerned with individual children's diets in a "middle class" English group of 435 boys and 481 girls, of all ages from 1 to 18 years. Although the consumption of specific food items may differ in the United States, this study gives some idea of individual variations in food intake and the trend with age. One outstanding significant fact is the finding that "similar individuals may differ enormously and unpredictably in their food habits." Yet the great departures from the average food habits reported in this survey appeared compatible with normal physical development. "These findings," the author concludes, "indicate that individual requirements must differ as much as individual intakes and that an average intake, however valuable statistically, should never be used to assess an individual's requirements."

Specifically, Widdowson noted that the consumption of some foods, such as bread, meat, potatoes, and sugar, increased in amounts until the children were 15, whereas such foods as biscuits, cheese, fruit, and green vegetables were eaten in similar amounts at all ages studied. A fairly constant milk intake of

approximately four-fifths of a pint was observed in children up to the age of 10, after which the intake declined.

Fish consumption, a potential source of naturally available fluoride, ranged from an average of approximately 3 ounces per week in the 1- to 4-year-old group to approximately 5 ounces per week in the 6- to 12-year-old group, increasing to 8 ounces in the 18-year-old group. Assuming a minimum of 5 parts per million of fluoride in fish (see above) this would mean a fluoride intake of 0.06 milligram in infants and 0.1 in 12-year-olds per day, only a 10th of the recommended caries-preventive level.

Expressed in grams per day, the average fish consumption in the English group was about 12 grams in the 1-year-olds, rising to 20 grams in the 12-year-olds and 32 grams in the 18-year-olds. By comparison, the average fish consumption in the United States has been reported to be approximately 13 grams per individual per day, in Norway about 50 grams, in Japan 100 grams. This last figure, reported as the highest in the world (News of Norway 1951), should provide about 0.5 milligrams of fluoride per individual per day. In one isolated community, the island of Tristan da Cunha, an average fish consumption of nearly 300 grams per individual, equivalent to about 1.5 milligrams fluoride per day, has been recorded. Although the water supplies contained only 0.2 parts per million of fluoride, the islanders were found to have a threshold degree of mottled enamel (Sognnaes, 1941) and an elevated fluoride content of the teeth (Sognnaes and Armstrong, 1941) close to the amount reported in United States communities with 1 part per million fluoride in the drinking water (McClure and Likins, 1941).

Widdowson gives quantitative data on the consumption of bread, cereal, milk, and sugar, all potential vehicles for fluoride supplement. The average bread consumption ranged from approximately 1½ ounces per day in the 1-year-olds and 4 in the 6-year-olds to 6 in the 12-year-olds. However, the individual range within each of these age groups was much greater than the difference between the 1- and 12-year-old averages. The range in the 1-year-old group was thus 0.2 to 3.8 ounces per day, in the 6-year-olds 1.7 to 8.5, and in the 12-year-old group 1.8 to 12.9 ounces. The approximate consumption of cereals (expressed in terms of flour, oatmeal, etc., as purchased) ranged from 2 ounces in the 1-year-old group to 4 ounces in the 6-year-olds, increasing to 6 ounces in the 12-year-olds, and after that remaining approximately the same to the 18-year-old group.

The milk consumption showed more similar averages for each age group; approximately 19 ounces per day in the 1-year-olds, 18 in the 6-year-olds, and 12 in the 12-year-olds. But again, there were considerable individual variations within each age group, ranging from 3.2 to 34.1 ounces in the 1-year-olds, 7.7 to 30.4 in the 6-year-olds, and 3.2 to 28.5 in the 12-year-olds.

The total sugar consumption from all sources (as sugar, sweets, jam, cakes, puddings, cooked fruits, etc.) increased from approximately 9 ounces per week in the 1-year-olds and 17 ounces in the 6-year-olds, to 25 ounces in the 12-year-olds. Sugar as such contributed in the 1-year-old group an average of 3.8 ounces per individual per day, in the 6-year-olds 4.4 ounces, increasing to approximately 9 ounces in the 12-year-olds. The range within each age group was not given for sugar, but a significant sex difference was noted from 9 years of age on, when boys, contrary to the familiar saying, appeared to eat increasingly more sweets than girls, more than twice as much between the ages of 15 and 18 years.

From the above, it appears that there are limited data upon which to base the evaluation of potential fluoride vehicles among common foods. What information there is indicates large variations in individual intakes of specific food items which might possibly serve as fluoride vehicles.

In addition to the inadequacy of the quantitative data on food consumption at various ages, it must also be made clear that the committee has been able to find almost no evidence, except for water fluoridation, with regard to the effect of fluoride supplement on caries in man. Hence, discussion of the addition of fluoride to food items other than water must be based on certain assumptions rather than on concrete evidence.

In view of this lack of specific knowledge, any one fluoridated food, other than water, here considered must be subjected to lengthy experimentation before it could be put to general use. At the moment the problem can be only tentatively illustrated by discussing a few representative items within 3 categories: (1) solid, (2) liquid, and (3) miscellaneous vehicles.

Solid vehicles, among common foods suitable as carriers for fluoride, must above all meet the requirements of food technology for easy handling and mix-

ing. Flour, as an example within this category, may be considered a feasible vehicle from the standpoint of stability and the technology of distribution of the fluoride uniformly throughout the food. According to the study of Widdowson (1947) previously referred to, the consumption of cereal increased from approximately 2 ounces per individual per day in the 1-year-old group to an average of 6 ounces in the 12-year-old. The consumption of bread showed roughly the same quantitative increase with age. Consequently, the average intake of fluoride if added to flour, bread, or cereal, would come near to the desired increase with age from infancy to adolescence. The average daily consumption of flour in this country is estimated to be similar, or about 6½ ounces per individual per day in the adult. Considering the desirable intake of fluoride in older children as 1 milligram per day, the approximate amount of fluoride to be incorporated in the flour could be calculated. However, we have already referred to English observations suggesting that there are marked individual variations within single age groups in the consumption of bread. In addition, it is believed, for lack of exact data, that in the United States bread would not be used to the great extent in infancy during the early stage of tooth development.

Canned baby food, being so extensively used in the United States, might merit study as a practical source of fluoride in infancy and early childhood, but the question may be raised as to whether the distribution is uniform enough in rural districts and other isolated parts of the country, populations which are precisely those least likely to have access to water fluoridation. The extent to which the use of processed baby food actually is used in various locations would have to be determined if this vehicle proves to have merit otherwise.

Under the heading of liquid vehicles, one would obviously list drinking water first. It should be stressed again that this is the only vehicle for fluoridation which can be judged on the basis of prolonged epidemiologic observations as well as clinical application. The committee is of the opinion, because of the knowledge already available regarding this vehicle, that bottled fluoridated water is the only source meriting serious consideration as a fluoride supplement whereby fluoridation could immediately reach communities without a communal water supply. It is possible, however, that this vehicle, while the most nearly ideal as such, might be too costly as a source of water supply, in view of the expense of bottling, distributing, and insuring compliance with sanitary regulations; this should be explored further.

Next to bottled water, the mechanics of mixing fluoride to a liquid food vehicle would appear to be simplest for juices and soups. These vehicles merit attention because in themselves they contribute valuable nutrients. In addition to being low in cost, they are conveniently marketed, stable, and used relatively extensively by various age groups without tending to be consumed in excess.

The pros and cons of adding fluoride to milk have been discussed in a recent report (Pearlman, 1953). The argument that calcium fluoride would be produced, and hence make the fluoride ion less available, does not appear to be an important factor in the concentration of 1 part per million. However, in regard to distribution, the committee feels that there would be a lack of uniformity of intake in various parts of the country and that small farms and dairies in rural districts would have problems in controlling the addition of fluoride to small quantities of milk. Furthermore, the intake of milk during the first year of life would depend on the extent to which the babies are breast fed. Human milk contains only traces of fluoride, the highest concentration found in one study (Hodge, et al., unpublished data) being .09 part per million. This means that a nursing baby drinking approximately 500 cubic centimeters of milk in 1 day would only receive the negligible amount of 0.045 milligram of fluoride per day, suggesting that supplementary fluoride through water or baby food should be considered.

Among miscellaneous vehicles, consideration was given to sugar, salt, and tablets.

It was felt that sugar is liable to wide variation and excess in usage and would not satisfy the requirements as to either uniformity of use or self-regulatory control.

No exact information has been obtained with regard to the consumption of salt in various age groups. It is not even certain that this vehicle would be practical from a technical standpoint; it would have to be determined, for instance, whether the addition of sodium fluoride would be uniform throughout and whether it would affect unfavorably the antihygroscopic property of the product. While the daily consumption would have to be determined more exactly, there

are doubts as to whether this vehicle would serve the purpose for infants and young children.

On a small scale, there has been some experimentation with the administration of fluoride in the form of tablets, mainly by professional personnel of the United States Public Health Service. These data on children, gradually accumulated, support the contention that this procedure is safe and beneficial; however, the data are not yet conclusive. It should also be emphasized that this means of prescribing fluoride might be safe within a group intimately familiar with the possible hazards of the problem and would not have general application except to selected patients on a prescription basis or in a supervised program. The same restrictions would hold for other potential types of prescribed fluoride, with or without other nutrients or drugs.

The topical application of fluoride to the teeth does not, strictly speaking, enter into this discussion of vehicles for fluoridation of the American diet. In this caries-prophylatic procedure, fluoride is applied by the private dentist or in a school program, usually as a 2 percent sodium fluoride solution; i. e., some 10,000 times as concentrated as the dosage recommended for internal use through water fluoridation. The dentist applies only a small amount to the external surface of the teeth, but the stock solution itself is much too strong to be dispensed to the layman. A single dose of a few ounces of such a 2 percent solution, if by accident taken internally and retained, would contain enough fluoride to produce acute poisoning.

The topical application of fluoride is merely mentioned here to indicate that, while it is a safe procedure as long as it is in the hands of expertly trained personnel, the reports on its caries-preventive potentials have not been as favorable or uniform as those on water fluoridation. In addition, it is a relatively expensive and time-consuming preventive measure compared with community water fluoridation. The committee is of the opinion that topical application of fluoride is not a substitute for fluoridation through the drinking water or other potential vehicles which, during tooth development, can provide an optimal internal supplement of approximately one-half to 1 milligram of fluoride per day (see table 3).

IV. SUMMARY AND CONCLUSIONS

1. A study has been made of the problem of providing an optimum amount of fluoride in the American diet.

2. The increasing magnitude of the caries problem and the inadequacy of conventional preventive methods are stressed.

3. The American diet normally provides less than the optimal caries-preventive amount of fluoride.

4. On the basis of epidemiologic and experimental observations in fluoridated communities, the most reliable vehicle for supplementing the fluoride intake is water.

5. The adjustment of the fluoride content of drinking water to 1 part per million fluoride is in principle and in practice the soundest and most effective approach to caries prevention on a large scale known today.

6. Next to fluoridated communal water supply, the use of bottled fluoridated water at 1 part per million, used for cooking and drinking as the exclusive source of water, is the only supplement which could immediately be put to use on the strength of present evidence in regard to amount of fluoride ingested and caries-preventive effect in man.

7. Other vehicles, liquid or solid, cannot at present be recommended but merit further study with respect to consumption, technique of fluoridation, distribution, and effectiveness.

8. In order to determine the value of other dietary fluoride vehicles, additional studies are recommended on food and water consumption from infancy to adolescence and on the metabolism of food-borne versus water-borne fluorides.

9. If any vehicle, upon further study, should prove to be promising, it is imperative that such vehicle be subjected to adequately controlled clinical studies in humans before any large-scale application is made.

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(The following additional material was submitted for the record:)

HASBROUCK HEIGHTS, N. J., *June 31, 1954.*

HON. CHARLES A. WOLVERTON,
House Office Building, Washington, D. C.

DEAR SIR: I am very converned about bill H. R. 2341, titled "To protect the public health from the dangers of fluoridation of water" which will come up for your consideration. For the past 10 to 12 years I have read extensively on this topic and have come to the opinion that there is no other single step that can improve dental health like the fluoridation of communal water supplies can and will do. The evidence is overwhelmingly in favor of fluoridation. Please file this correspondence for the record. I am very much in favor of fluoridation.

Yours truly,

S. J. FANALE, D. D. S.

STATE OF CALIFORNIA,
DEPARTMENT OF PUBLIC HEALTH,
San Francisco, Calif., May 25, 1954.

HON. CARL HINSHAW,
Interstate and Foreign Commerce Committee,
House of Representatives, Washington, D. C.

MY DEAR MR. HINSHAW: As the director of the California State Department of Public Health and the president of the California State Board of Public Health, we respectfully submit the position of the department and the board on the fluoridation of public water supplies.

The department of public health has made a thorough study and critical evaluation of the great mass of scientific data concerning fluorine and its compounds in relation to water fluoridation, the physiological effects of fluorides on the human body, and the relationship of fluorides to dental caries.

It is the considered opinion of the department and the board that the controlled fluoridation of public water supplies is a safe and economical public-health measure for the partial prevention of dental caries. (See attachment.)

Approximately 3,600,000 people in California have been drinking water containing 0.5 parts per million or more of fluoride for many years. At present 14 cities in California have adjusted the fluoride level of their public water supplies to a concentration beneficial to the health of their citizens. Thus, 34 percent, or approximately 4,747,000 people in California, are drinking fluoridated water.

The California State Board of Public Health and the California Department of Public Health hold the view that the decision with respect to fluoridation of public water supplies must be the prerogative of the local community. In accordance with this view, the board and the department have set standards and procedures under which communities desiring to fluoridate their water supplies may obtain a permit to do so. While the board and the department would not favor coercing a community to fluoridate its water, the board and the department believe that no community should be prevented from fluoridating if it wishes to do so.

House of Representatives bill No. 2341 disregards the great preponderance of scientific evidence on fluoridation.

House of Representatives bill No. 2341 would deprive communities in California of their prerogative of local decision on a proven public-health measure.

The California State board and the department of public health respectfully request your honorable committee to carefully weigh the evidence on fluoridation of public water supplies. They hope that the committee will then deem it appropriate in the furtherance of public health in the Nation to oppose the legislation referred to herein as House of Representatives bill No. 2341.

Respectfully submitted.

MALCOLM H. MERRILL, M. D.,
Director of Public Health.
CHARLES E. SMITH, M. D.,
President, California State Board of Public Health.

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC HEALTH

SAN FRANCISCO, CALIF.

NOTICE OF POLICY STATEMENT AND RESOLUTION BY THE STATE BOARD OF PUBLIC HEALTH WITH RESPECT TO THE FLUORIDATION OF PUBLIC WATER SUPPLIES

On August 29, 1950, the State board of public health formally stated its policy on the question of adding fluoride to public water supplies in California for the partial control of dental caries.

On September 14, 1951, the board reaffirmed its policy in a resolution, with particular reference to the authority of the State department of public health to grant permits for public water supplies to which fluoride will be added.

The policy statement and the subsequent resolution are set forth in this leaflet as they appear in the minutes of board meetings held on the two dates cited.

MALCOLM H. MERRILL, M. D.,
Acting Executive Officer, State Board of Public Health.

STATEMENT BY THE STATE BOARD OF PUBLIC HEALTH

(Approved on August 29, 1950)

The California State Board of Public Health approves the fluoridation of public water supplies for the partial control of dental caries providing that the local dental and medical societies also approve.

Details for accomplishing fluoridation must be reviewed in each instance by the State department of public health under the provisions of the California pure water law. (See ch. 7, pt. 1, division 5, Health and Safety Code.)

RESOLUTION OF THE STATE BOARD OF PUBLIC HEALTH

(Adopted on September 14, 1951)

Whereas on August 29, 1950, the State board of public health issued a statement of policy approving the addition of fluoride to public water supplies in this State subject to prior approval of the local dental and medical associations; and

Whereas the legislature considered at the 1951 session a bill, a portion of which specifically authorized purveyors of public water supplies, including utility and irrigation districts, to add fluoride to their water supplies under permit from the State department of public health; and

Whereas this portion of that bill was not passed by the legislature and this fact has raised doubts in many persons' minds as to the present legality of

fluoridation of water supplies other than bottled water supplies in California; and

Whereas the attorney general's office has advised the State department of public health that under existing statute there is no doubt that the department has authority to grant permits for addition of a beneficial mineral nonexistent or insufficient in those public water supplies not naturally endowed, if it finds that such treated water supplies will under all circumstances and conditions be pure, wholesome, and beneficial to health: Now, therefore, be it

Resolved, That the State board of public health finds that fluoridation of public water supplies by the placing a normal and beneficial mineral in proper concentration in those supplies in which it does not occur in optimum amounts naturally, will tend to produce a water that under all circumstances and conditions is pure, wholesome, potable, and beneficial to health; and be it further

Resolved, That the State board of public health herein reaffirms its policy statement of August 29, 1950, approving the fluoridation of public water supplies.

RESOLUTION OF THE STATE BOARD OF PUBLIC HEALTH

(Adopted on April 29, 1952)

Whereas on August 29, 1950, the State board of public health issued a statement of policy approving the addition of fluoride to public water supplies in this State subject to prior approval of the local dental and medical associations, and on September 14, 1951, reaffirmed that policy, which statement of policy indicated its feeling that properly controlled fluoridation of public water supplies was appropriate; and

Whereas there have been some legal discussions misinterpreting the force and effect of these resolutions accusing the board of illegally delegating its powers; and

Whereas the board is fully aware of its powers under the Health and Safety Code and under no circumstances has delegated any of its powers with respect to fluoridation of public water supplies, but has desired to have the local area involved express by its medical and dental societies their local feeling concerning fluoridation; and

Whereas no authorization for permit to fluoridate is granted without proper application pursuant to the provisions of the Health and Safety Code: Therefore, be it

Resolved, That the board desired it distinctly understood that under no circumstances has it delegated any of its power and authority with respect to permits to fluoride public water supplies to anyone and will grant permits to fluoridate upon proper application made pursuant to the Health and Safety Code.

LAKELAND, FLA., *May 1, 1954.*

Re our position—for the proposed H. R. 2341 to be enacted.

Hon. CHARLES A. WOLVERTON,
Chairman, House Interstate and Foreign Commerce Committee,
House Office Building, Washington, D. C.

GENTLEMEN: As chairman of the Florida Statewide Committee of the Pure Water Association of America, and thus representing thousands of citizens of the State of Florida, who are against fluoridation of public water supplies, I submit the following statements for your consideration and respectfully request that it be filed as our proposed testimony during hearings of H. R. 2341.

We are asking your support of the Wier bill, H. R. 2341, to prohibit the addition of sodium fluoride in any form, by any means, and for any alleged purpose.

We support this bill as it now reads because:

1. We believe pure drinking water should come from our city reservoirs and that poison chemicals for human consumption should be sold in drugstores by licensed pharmacists.

2. We insist upon exercise of our right to be secure in our homes and persons; to choose our own physician, our own medicine, and manner of taking it.

3. We stand upon our right accorded us by laws of this country to subject our bodies to experimentation either mass or individual, only if and when we choose to do so and then only by written permission. Compulsory medication (or experimentation) is contrary to the fundamental freedom of Americans, and contrary to the wishes and needs of each individual.

4. Mass medication (fluoridation of public water supplies) ignores the individual patient-physician relationship (or dentist-patient relationship).

5. Tooth decay is an outward manifestation of body degeneration or metabolic dysfunction. Prevention of tooth decay by proper oral hygiene and proper attention to general health measures, including proper choice of vital foods, is the preferred method recommended by most physicians and dentists.

6. The proponents disregard the fact that fluorine is a cumulative poison.

7. Because of the destructive power of fluorides on the enzyme system of the body and possible harm to the soft and osseous tissues of the human body.

8. Individual differences (susceptibilities) preclude any "average dose" for total populations being applied through the public drinking-water supplies.

9. It is uneconomical. The expense for fluoridation is staggering when one takes into account personnel in Federal, State, county, and community levels, for chemists, supervisors, public relations, printing, machinery, chemicals, and laboratories, when only about 2 percent of the fluoridated water will reach the children for whom it is intended.

10. It is unwarranted because for a few cents parents can purchase this chemical in an approved form from the druggist with a properly executed prescription from the dentist or physician who will then be responsible to that parent for what happens to the child—should that child be susceptible. The dentist can also use the topical application of fluorides.

11. It is unethical and illegal because city councils and waterworks departments are not licensed to prescribe medical treatment or to dispense treatment to anyone—individually or en masse.

12. It is unscientific because each individual is a law unto himself and the physician is the first to tell his patient that he needs treatment designed for his specific trouble.

13. Because it opens the door for other forms of mass medication through the public water supplies. Once instituted and accepted fluoridation would have sabotaged the one law we have designed to protect us in our food and drink, and set a precedent by which we would have to abide for future medication through public water supplies.

14. Because these are such critical days for our Nation and we need to give our time, energy, and resources to promoting unity, harmonious relations, and civil defense, and because we are prevented from doing so due to the fact that we are continually harassed by the proponents in their attempt to force fluoridation upon us.

15. Because such monumental sums of our national tax money have been spent and continue to be spent to propagandize for fluoridation, and because citizens who neither need nor want to take sodium fluoride must of necessity spend additional sums to protect themselves against fluoridation proponents—who continually violate our decisions against this compulsory measure.

16. Because fluoridation of public water supplies imposes a harsh and undue hardship upon all citizens who oppose drinking fluorides by forcing them to—

(*a*) Spend an average of $135 annually for bottled water fluorine free for a family of 3 for all cooking and drinking purposes.

(*b*) Send their children to other colleges—which might, and often do, charge more than the State university, which is frequently fluoridated (thereby forcing all the young adults to drink this poison chemical without any recourse even when they are told it can do them no good, and they know it could prove detrimental). This extra expenditure is unwarranted and more often than not can be ill afforded.

17. Because the (*a*) efficacy of fluorides; (*b*) the proposed dilution of this poison chemical; (*c*) number of communities using fluorides or not using fluorides; (*d*) whether artificial or natural fluorides are or are not identical; (*e*) whether everyone in America does or does not have decayed teeth; (*f*) and regardless how many scientists, dentists, or bureaus do or do not endorse fluoridation—(all of this) is entirely beside the point. The point in this issue is—it would be compulsory experimental mass medication to which the public under our Constitution does not have to subject itself—and because their laws do not empower our city officials to use communal water supplies as carrier for medication.

18. Because we find ourselves in desperate need of legal protection to end this most controversial of all subjects—compulsory mass medication (fluoridation) and thus give us surcease from harassment; physical and financial expenditures; and from mental-distress cases, wherein many are already physically afflicted

and fear damage from this poison chemical which they must ingest for the rest of their lives.

We, therefore, urge you to support this bill, H. R. 2341, and do all you can to pass it.

Sincerely,

MRS. HERMAN J. KUPPERS,
State Chairman, Florida State-Wide Committee of the Pure Water Association of America.

(Communications have been received from the following expressing opposition to the enactment of H. R. 2341, to protect the public health from the dangers of fluoridation of water:)

HEALTH DEPARTMENTS BY STATES

Alabama:
Dr. William L. Scholes, director, Dental Division, Montgomery
Dr. D. G. Gill, State health officer, Montgomery
Arkansas: State Board of Health, Dr. John T. Herron, M. D., State health officer, Little Rock
California: Dr. Malcolm H. Merrill, M. D., director of public health, San Francisco
Colorado: Dr. R. L. Cleere, executive director, Department of Public Health, Denver
Connecticut: Franklin M. Erlenback, D. M. D., Department of Health, Hartford
Georgia:
John E. Chrietzberg, D. D. S., Department of Public Health, Atlanta
Dr. T. F. Sellers, M. D., Department of Public Health, Atlanta
Hawaii (Territory of): Board of health, Dr. Richard K. Lee, M. D., Honolulu
Idaho: L. J. Peterson, M. S. P. H., Department of Public Health, Boise
Illinois:
Dr. J. W. Krupicka, D. D. S., State Department of Public Health, Rock Island
Cyril L. Friend, D. D. S., Department of Public Health, Carbondale
Dr. Norman J. Rose, Department of Public Health, Springfield
John E. Zur, D. D. S., Department of Public Health, Springfield
Dr. Leonard M. Schuman, Department of Public Health, Springfield
Northeastern regional office, Department of Public Health, Robert L. Hass, D. D. S., Aurora
Orvis S. Hoag, D. D. S., Department of Public Health, Springfield
Indiana: Roy D. Smiley, D. D. S., State Board of Health, Indianapolis
Iowa: Charles H. Henshaw, D. D. S., Department of Health, Des Moines
Kansas: Dr. Thomas R. Hood, Kansas State Board of Health, Topeka
Maryland: Richard C. Leonard, D. D. S., Department of Health, Baltimore
Massachusetts: Dr. Samuel B. Kirkwood, commissioner, Department of Public Health, Boston
Michigan: Fred Wertheimer, D. D. S., Department of Health, Lansing
Minnesota:
Dr. A. J. Chesley, Minnesota Department of Health, Minneapolis
William A. Jordan, D. D. S., Minnesota Department of Health, Minneapolis
Missouri:
Dr. J. Earl Smith, D. D., Department of Public Welfare, Division of Health (health commissioner), St. Louis
C. E. Presnell, D. D. S., Division of Health, Jefferson City
Nebraska: H. W. Heinz, D. D. S., Departmentof Health, Lincoln
Nevada: O. M. Seifert, D. D. S., Department of Health, Reno
New Jersey: Dr. Daniel Bergsman, Department of Health, Trenton
New York: Herman E. Hilleboe, M. D., Department of Health, Albany
North Dakota: E. C. Linscheid, D. D. S., Department of Health, Bismarck
Ohio: H. B. Millhoff, D. D. S., Department of Health, Columbus
Oklahoma: Frank P. Bertram, D. D. S., Department of Health, Oklahoma City
Oregon: David M. Witter, D. D. S., State Board of Health, Portland
Pennsylvania: Dr. Russell E. Teague, M. D., Department of Health, Harrisburg
South Carolina: Dr. Ben F. Wyman, State Health Officer, Columbia

Tennessee:
R. H. Hutcheson, M. D., Department of Public Health, Nashville
Carl L. Sebelius, D. D. S., Department of Public Health, Nashville
Texas: Edward Taylor, D. D. S., Department of Health, Austin
Utah: George A. Spendlove, Director of Public Health, Salt Lake City
Washington: Olin E. Hoffman, D. D. S., Department of Health, Seattle
West Virginia: James W. Ruble, D. D. S., Department of Health, Charleston
Wisconsin: F. A. Bull, D. D. S., Board of Health, Madison

(Communications have been received from the following expressing opposition to the enactment of H. R. 2341, to protect the public health from the dangers of fluoridation of water):

DENTAL ASSOCIATIONS BY STATES

Alabama: Frank A. Finney, Jr., Alabama Dental Association, Gadsden
Alaska (Territory of): Charles J. Pearson, D. M. D., secretary, Alaska Territorial Dental Society, 500 K Street
Arizona: R. K. Trueblood, D. D. S., Arizona State Dental Board, Glendale
California:
Lawrence R. Ludwigsen, D. D. S., California State Dental Association, San Francisco
J. Leonard Schmitz, D. D. S., San Francisco Dental Society, San Francisco
Connecticut:
Earle S. Arnold, D. D. S., Connecticut State Dental Association, West Hartford
Alfred J. Gengras, Jr., D. M. D., Connecticut State Dental Association, West Hartford
District of Columbia: Z. Bernard Lloyd, D. D. S., District of Columbia Dental Society, Washington
Georgia: H. Harvey Payne, Georgia Dental Association, Atlanta
Illinois: Paul W. Clopper, D. D. S., Illinois State Dental Society, Peoria
Indiana: E. E. Ewbank, D. D. S., Indiana State Dental Association, Kingman
Kansas: Dr. Dan A. Hedge, Kansas State Dental Association, Hoisington
Louisiana: Dr. Julian S. Bernhard, Louisiana State Dental Society, Shreveport
Maine: Alonzo H. Garcelon, D. D. S., Maine Dental Society, Augusta
Maryland: Dr. Morris Cramer, Maryland State Dental Association, Baltimore
Massachusetts:
Harold E. Tingley, D. M. D., Massachusetts Dental Society, Boston
Maurice F. Grossman, D. D. S., Massachusetts Dental Society, Lawrence
Michigan:
H. Leon Snow, Michigan State Dental Association, Lansing
Charles W. Harling, D. D. S., Detroit District Dental Society, Detroit
Minnesota:
Milton G. Walls, D. D. S., Minnesota State Dental Association, St. Paul
Lorin B. Hodgson, D. D. S., West Central District Dental Society, Breckenridge
Missouri:
E. D. Suggett, D. D. S., Missouri State Dental Association, Jefferson City
D. W. Brock, president, Missouri State Dental Association, St. Louis
W. Wayne White, Missouri State Dental Association, Kansas City
Montana:
E. G. Vedova, D. D. S., Montana State Dental Association, Billings
R. D. Curry, D. D. S., Montana State Dental Association, Billings
Nebraska: F. A. Pierson, D. D. S., Nebraska State Dental Association, Lincoln
Nevada: R. J. LaFond, D. D. S., Nevada State Dental Society, Reno
New Hampshire: Floyd E. Williams, New Hampshire Dental Society, Manchester
New Jersey:
John G. Carr, D. D. S., the New Jersey State Dental Society, Camden
Milton B. Asbell, D. D. S., Southern Dental Society of New Jersey
New York: Charles A. Wilkie, D. D. S., the Dental Society of the State of New York, Buffalo
North Carolina: Dr. Neal Sheffield, North Carolina Dental Society, Greensboro

North Dakota: Victor B. Keltgen, D. D. S., North Dakota State Dental Association, Fargo
Ohio:
H. J. Hoppe, Ohio State Dental Association, Cleveland
Raymond L. Cummins, D. D. S., Ohio State Dental Association, Columbus
S. A. Schmid, president, Ohio State Dental Association, Cincinnati
Oklahoma: Dean Robertson, D. D. S., Oklahoma State Dental Association, Oklahoma City
Oregon: Thomas D. Holder, D. M. D., Oregon State Dental Association, Portland
Pennsylvania:
Homer Butts, D. D. S., Pennsylvania State Dental Society, Harrisburg
Charles S. Gaige, D. D. S., Pennsylvania State Dental Society, Lancaster
Rhode Island: Bernard C. Friedman, D. M. D., Rhode Island State Dental Society, Newport
South Dakota:
Dr. Leo N. Thelen, South Dakota State Dental Society, Sioux Falls
M. J. May, D. D. S., South Dakota State Dental Society, Rapid City
Tennessee: Wayne L. McCulley, D. D. S., Tennessee State Dental Association, Nashville
Utah: R. C. Dalgleish, D. D. S., Utah State Dental Association, 124 State Capitol Building
Virginia: W. T. McAfee, Virginia State Dental Association, Roanoke
Wisconsin: Charles J. Baumann, Sr., D. D. S., Wisconsin State Dental Society, Milwaukee
Wyoming:
C. H. Carpenter, D. D. S., Wyoming State Dental Association, Casper
T. J. Drew, D. D. S., Wyoming State Dental Association, Cheyenne

(Communications have been received from the following expressing opposition to the enactment of H. R. 2341:)

Harley L. Robertson, president, the Society of State Directors of Health, Physical Education and Recreation, Old Capital Building, Olympia, Wash.
Dr. Charles E. Smith, University of California, School of Public Health, Berkeley.
Ralph E. Carter, mayor, city of Vancouver, Wash.
L. Henter Blevins, D. D. S., president, Virginia State Society of Dentistry for Children, Arlington, Va.
J. L. T. Appleton, professor of microbiology, University of Pennsylvania, Philadelphia
Mrs. Leonard E. Moody, Village Improvement Association, Cranford, N. J.
Russell A. Dixon, dean, Howard University, Washington, D. C.
Gerald J. Cox, Ph. D., University of Pittsburgh, Pittsburgh, Pa.
Dr. C. F. Leonard, East Side Health District, East St. Louis, Ill.
James H. Shaw, Ph. D., assistant professor, Harvard School of Dental Medicine, Boston, Mass.
R. W. Bunting, dean, School of Dentistry, University of Michigan, Ann Arbor
Harold Barnes, D. D. S., American Society of Dentistry for Children, North Hollywood
Frank D. Paul, D. M. D., Essex County Dental Society, Montclair, N. J.
H. H. Mitchell, professor of Animal Nutrition, University of Illinois, Urbana
Dr. W. B. Prothro, city of Grand Rapids, public health director, Michigan
Alfred J. Cilella, city council, city hall, Chicago, Ill.
Francis Lehr, D. D. S., New Jersey Society of Dentistry for Children, Elizabeth, N. J.
Rodger E. Poole, D. D. S., New Jersey Society of Dentistry for Children, Upper Montclair, N. J.
Francis B. Elder, the American Public Health Association, 1790 Broadway, New York City
H. Berton McCauley, D. D. S., Maryland Society of Dentistry for Children, Towson, Md.
La Rue L. Miller, Michigan Public Health Association, Inc., Lansing, Mich.
O. W. Brandhorst, American College of Dentists, St. Louis, Mo.
Dr. A. O. DeWeese, American School Health Association, Kent State University, Kent, Ohio
Henry S. Frank, professor of chemistry, University of Pittsburgh, Pittsburgh

Donald E. Eagles, North Dakota Hospital Service Association, Fargo, N. Dak.
S. J. Kreshover, D. D. S., Medical College of Virginia, Richmond
Charles F. Kerr, department of education, division of health education, Nashville, Tenn.
W. P. Anderson, M. D., Medical Society of the State of New York, New York City
R. R. Rosell, Minnesota State Medical Association, St. Paul, Minn.
Dr. Nils P. Larsen, Hawaii Medical Association, Honolulu, T. H.
Dr. Cyrus W. Anderson, Colorado State Medical Society, Denver, Colo.
Harold K. Jack, supervisor, State board of education, Richmond, Va.
H. J. Blum, health officer, Contra Costa County, Martinez, Calif.
Dr. R. L. Dunton, president, Minnesota District Dental Society, Minneapolis, Minn.
Dr. J. B. Askew, director of public health, county of San Diego, Calif.
Dr. R. B. Moyer, secretary, Central Ohio Dental Society
G. W. Solfronk, D. D. S., Chicago Dental Society, Chicago 2, Ill.
Dr. E. R. Krumbiegel, commissioner of health, Milwaukee, Wis.
Harry W. Bruce, Jr., D. D. S., Chattanooga-Hamilton County Health Department, Tennessee
Polly Ayers, D. D. S., director, Bureau of Dental Health, Birmingham, Ala.
Dr. Ellis D. Sox, director of public health, San Francisco
Dr. Jack Allen Rice, president, Idaho State Dental Association, Coeur D'Alene, Idaho

Mr. HALE. The Chair has been requested to announce that Dr. Spira will have an opportunity to use the committee room for a display of lantern slides to anybody who is interested to see them.

The committee stands adjourned until tomorrow morning at 10 o'clock.

(Whereupon, at 4:30 p. m., the hearing was adjourned.)

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