Dr. Harvey W. Wiley

on

Chemicals in Food

We reprint Dr. Harvey W. Wiley's story (from his Autobiography) of how he unsuccessfully tried to enforce the 1906 Pure Food Law as applied to coal tar dyes, the adulteration of flour with bleach chemicals, and the addition of habit forming drugs to soft drinks.

The commercial interests that were violating the law were too powerful politically to be disturbed by Dr. Wiley. In fact, they seem to be still too powerful to be disturbed, since the practices are still going on.

Flour is still being poisoned with bleach chemicals, in spite of such uncontrovertible proof as we offer in the way of the article we have added "BROT KRANKHEIT," in which we have omitted the author's name to avoid embarrassing him professionally. (Organized Medicine and organized Dentistry have ways of punishing their members who tell the truth where food racketeers are involved. The food racketeers apparently have both these organizations well in hand). (The dentists for instance are forced to avoid criticizing the fluoride campaign on penalty of losing their membership in their own Association; although Dr. McCay at Cornell has conclusively demonstrated that one part per million of fluoride in water causes rats to lose their teeth and develop diseased kidneys as they reach old age).

It would be a mighty feat to clean up the flour situation. Flour can only be wholesome if freshly ground and immediately made into bread. Fresh flour is as perishable as fresh milk, and no centralized milling could exist if the people were to get honest flour. It would have to be made in every community just as milk is supplied locally.

(We suggest you read the book GRAHAM ON BREAD, available from Lee Foundation for Nutritional Research, Milwaukee 1, Wisconsin. Price $1.50. The author analyzed the situation in 1835—it was bad then—worse today. 750,000 people a year are dying of heart disease, and we spend a billion and a half dollars a year on tooth repair, a primary factor being our low quality bread. (In India the incidence of tooth decay is ONE PERSON IN EIGHTY. Here our drafted men have an average of 15 cavities each).

The oils in flour become rancid in a few weeks. These rancid oils are carcinogenic and destructive to liver cells. How much these toxic effects are enhanced by the bleach, Dr. X can only estimate in his article BROT KRANKHEIT, which we reproduce following Dr. Wiley's article.

ROYAL LEE – Feb. 1960

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We quote below Pages 236 to 250
from the Book

"HARVEY W. WILEY–AN AUTOBIOGRAPHY"

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I began my public career without any idea of being quarrelsome and belligerent. But from my entry into public life I became a belligerent in, I think, the best sense of the term. I fought with all my power for what I considered to be right, and opposed with all the power at my disposal what I considered to be wrong. I do not claim that my judgment was unerring, but I am sure that those who have been associated with me will bear witness that upon the whole my judgment was fairly correct.

As I look back upon them it seems to me that all the great battles of my life were devoid of personal hatred or prejudice; and I feel that I had the good fortune to

be ranged on the side of right in every important contest I can remember. This feeling has given me courage throughout my career. I belong to that class of people who can be classed properly as cowards. I can not claim that my fighting qualities are due to any natural bravery. They have arisen from convictions, planted by the earliest teachings of my father and mother, that I must be certain I am on the right side whatever I do.

It could serve no good purpose to recount in detail the many battles over the enforcement of the Pure Food and Drugs Act. I shall mention only a few of the more outstanding and significant of the contests. In trying to make sure that I was right before going ahead, I performed numerous experiments on my poison squad, whose acquaintance the reader has already made.

Benzoate of soda became the bloody angle of attack on the Pure Food and Drugs Act. Those in opposition to the enforcement of the Act soon gave up their attack on me individually. They went to my superior officer. There they had great success. In the Department of Agriculture they secured the active cooperation of the solicitor, Mr. George P. McCabe, who had a powerful pull with Secretary James Wilson. He finally won over the secretary to the cause. Mr. McCabe was an ingenious general. His first effort to control the administration of the law over which, by the law itself, he had nothing to do whatever, was in the limitation of my authority as chief of the Bureau.

One morning when Mr. McCabe had gained complete control, about three months after the law had been in force, the secretary walked into my office with a young man, apparently about thirty-five years old. He introduced him as Professor F. L. Dunlap, late of the University of Michigan. He said: "I have just appointed Professor Dunlap as your associate. He will be acting-chief of the Bureau in your absence but will not be subject while you are here to your authority. He will report directly to me. His duties are to be those of secretary of a Board of Food and Drug Inspection which I have just organized. You are to be chairman of that Board, Dunlap is to be the secretary and the third member of the Board is the solicitor, Mr. George P. McCabe."

My feelings at this act of usurpation of authority may well be imagined. There was nothing in the food law which authorized the appointment of a Board of Food and Drug Inspection. The law provided in specific terms that all samples should be analyzed by the Bureau of Chemistry for the purpose of determining whether or not they were adulterated or misbranded under the Act. I considered that it was illegal to take this power away from the chief of the Bureau where the law had placed it. I saw the ulterior purpose of this move: to hamstring the Food and Drugs Act. This board performed its functions to perfection. I was a mere figurehead; the two other members voting together overruled my decisions constantly. In other words, the Bureau of Chemistry

was no longer the judge of whether an article was adulterated or misbranded. I soon found it impossible to bring any cases against certain classes of offenders, particularly the rectifiers and manufacturers of so-called patent medicines containing alcohol as the chief ingredient.

The opponents of the pure food law were of course highly elated when they found I had been eliminated from the functions imposed upon me by law. They were still nervous, however, about two questions: benzoate of soda and saccharin. The manufacturers of alum were extremely anxious respecting my attitude toward alum baking-powders. Accordingly, a delegation representing these interests visited President Roosevelt and told what serious damage and destruction were threatened to their industry if my opinion were carried into effect. They asked that some other authority be delegated to determine whether or not these bodies were injurious to health.

The morning following their visit to the White House Secretary Wilson, Solicitor McCabe and myself were summoned to the president's office to meet the delegation which had met him the day before. There were an attorney representing the interests of the Curtice Brothers and the Williams Brothers and also various other persons interested in these industries and in saccharin, headed by Congressman J. S. Sherman, subsequently vice-president of the United States. We were all seated

around the Cabinet table. President Roosevelt said to the spokesman of the party:

"I want you to repeat now what you told me yesterday. I have had the Secretary of Agriculture and Doctor Wiley come to listen to what you said." They were somewhat loath to repeat the accusations in our presence but upon the president's insistence did so. At that time the secretary was still on my side of the benzoate of soda question. After their story had been told, the president turned to Secretary Wilson and said: "Do you think benzoate of soda injurious?"

Secretary Wilson replied: "My chemist carried on experimental determinations on healthy young men and found it so and I agree with him."

The president then said to me: "Doctor Wiley, do you think benzoate of soda is an injurious substance when placed in food?"

"Mr. President," I said, "I don't think, I know."

Then turning to these protestants, striking the table with his fist a blow such as Dempsey might have given, he said: "You shall not put this substance in foods." The victory against benzoate of soda, so far as the president of the United States was concerned, was certainly won.

Mr. Sherman then interposed as follows: "Mr. President, benzoate of soda was not the only thing that we were protesting about. Also, you will remember, I mentioned saccharin. Last year," he continued, "my firm of

fruit packers saved four thousand dollars by using saccharin instead of sugar in sweet corn."

"Yes, Mr. President," I interjected, "and everybody who ate that corn thought they were eating sugar, whereas they were eating a substance which was highly injurious to health."

When I said this, President Roosevelt turned upon me, purple with anger, and with clenched fists, hissing through his teeth, said: "You say saccharin is injurious to health? Why, Doctor Rixey gives it to me every day. Anybody who says saccharin is injurious to health is an idiot."

Our victory was turned into ignominious defeat. The next day, by order of President Roosevelt, the Remsen Board of consulting scientific experts was appointed and to them were delegated most of the rights and privileges which the law had given the Bureau of Chemistry. The Pure Food and Drugs Act was virtually repealed by executive edict.

Of course I did not cease fighting for what I felt to be right, and it will be seen later in this account that my work in behalf of pure food outlived the Remsen Board. I have discussed at length and in detail the assaults that were made on the law, and on its enforcement by the Bureau of Chemistry, in my book *The History of a Crime against the Food and Drugs Act* (1929), and I need not duplicate that discussion in this record, which may well continue to be for the most part a recital of

the constructive accomplishments of my life and work.

The members of the Remsen Board were men eminent in their particular line of chemistry and physiology. Presumably they were men of ethical principles. Doctor Remsen himself claimed to be the discoverer of saccharin and received a medal from the Chicago Section of the American Chemical Society for that accomplishment. Whatever the attitude of this group of scientists may have been at the time of their appointment, it changed and they unconsciously became protagonists of every interest which I had opposed.

The press and public of the country were almost unanimously on my side of the question. They believed that the use of preservatives in foods was wholly unnecessary and always inimical to health. Criticism of the Remsen Board was universal except in certain trade papers devoted to the interests of adulteration. The daily press, the periodic press and the public were not slow to voice their indignation at the hamstringing of a law which had required over a quarter of a century's agitation to secure and which in the very infancy of its enforcement had been thus emasculated.

Although the Remsen Board was appointed to study the very same problems I had studied, they carefully abstained from conferring with me on any of the points which were in dispute. They were not averse, however, to imitating my plan of experiment. They organized three poison squads to be conducted on the general prin-

ciple of my own, but with one very remarkable exception. There was no control over the quantity of food which the patients ate. This was a fatal scientific error and opened the door to all sorts of false interpretation of data obtained.

An example of the evils the Pure Food and Drugs Act sought to remedy, and how I tried mightily to carry on its enforcement, may be cited in the "green peas" experiments. Sulphate of copper was used extensively in the greening of preserved peas and other naturally green vegetables. The canner knew that if sulphate of copper were added to these articles the green color which they possessed by nature did not fade in the canning process but was even intensified, and remained indefinitely. When these vegetables were served at the table they presented to the consumer the idea of extreme freshness, due to their vivid color.

I fed to my young men sulphate of copper in the quantities in which it was usually found in the green goods, and from that up to a considerably greater quantity. The conclusions I reached were the same as those I had found in the case of numerous such experiments: sulphate of copper was a harmful substance to put into foods and should be excluded under the Pure Food and Drugs Act. The result was that the ethical canners stopped putting this chemical into canned vegetables, and we can now sit down to dishes of preserved peas, beans, spinach or other green vegetables without danger

of being poisoned by the vividly green articles formerly served us. This was the only point on which the Remsen Board agreed with my conclusion. My results were reached three years before theirs, but they were not noted in their report.

Many states passed laws similar to the federal law, to give added protection to their citizens in the matter of foods and drugs. In Indiana the law specifically banned the use of benzoate of soda in food products. Two powerful food-manufacturing companies made a test case of this law. They brought suit in federal court, seeking to prevent the food commissioner of Indiana from enforcing this state law. The wisdom of the opposition forces in securing the appointment of the Remsen Board was justified by the direction of the Secretary of Agriculture that the members of the board, and the experts they had employed to conduct their experimental investigations, should attend the federal court at Indianapolis, or have affidavits prepared and sent to the court, favoring the overthrow of the Indiana law. All expenses were to be paid by the Department.

Indiana was anxious to have my testimony and that of my experts in rebuttal to the testimony of the Remsen Board and its experts. However, Solicitor McCabe issued an order forbidding any of the employees of the Bureau of Chemistry to testify in the case, and intimated that they could not be compelled to do so.

Mr. Floyd Robison, chemist of the Dairy and Food

Department of Michigan and *per diem* employee of the Bureau of Chemistry, went to Indianapolis and gave oral testimony as to the harmfulness of benzoate of soda, without the permission of the solicitor and consequently was summarily dismissed from the Bureau of Chemistry "for the good of the service." The state of Indiana, therefore, secured an order authorizing the taking of testimony in the case at Washington. On the court assembling in Washington, subpenas were issued for myself and my employees who were experts in the determinations of the so-called poison squad. I paid no attention to the order of the solicitor and gave my testimony in full. I instructed the other members of the Bureau when they were called on the witness-stand to say that they had been ordered by the Secretary of Agriculture, through the solicitor, not to give testimony. When this was done, the State of Indiana applied to the Supreme Court of the District of Columbia for an order compelling them to testify.

The above shows the extreme limits to which the Department of Agriculture was willing to go in order to support its own unholy position in regard to this matter. I may add that the testimony was all considered by the federal judge. The petitions of the companies were dismissed, and the right of Indiana to forbid the use of benzoate of soda in foods was maintained. The defendants carried the case to the United States Court of Appeals, and this high tribunal affirmed the decision of the

lower court! The case was then carried to the Supreme Court. Food adulterators were hard fighters in those days! But before the case came up for decision both companies withdrew from further contesting. Hard fighting must yield to the massed forces of public opinion and of right.

All this would seem to indicate that from the judicial point of view the case of the benzoate of soda interests was without merit. The collapse of this court campaign worked the end of the Remsen Board. It died a natural death a few years afterward and was followed to the grave by the anathemas of an outraged public and the moans of the food and drug adulterators.

CHAPTER TWENTY

Enforcing the Law Was No Picnic

As the coal-tar case and others prove; the American Chemical Society tenders me an enjoyable dinner.

Soon after the enforcement of the food law began, the question of coal-tar dyes in food came to the fore. The Bureau of Chemistry undertook an investigation into the effect of the dyes on the human organism. In order to make this investigation as complete as possible I employed Mr. Bernard Hesse, a noted chemist and particularly skilled in organic chemistry, to conduct a complete study of all the coal-tar dyes. The result of the studies and experiments led to a very obvious conclusion: there were few coal-tar dyes of good character; most of them were harmful.

To permit the use of such dyes as we found harmless or apparently so, a food inspection decision was published in which the permitted coal-tar dyes were described. It was required that all of the permitted dyes be examined by Mr. Hesse, and if they were found free from foreign substances and properly manufactured and prepared, a number was given to each batch of such dyes which followed them throughout all their use in food products. These dyes were known as certified dyes.

For many years Germany had controlled practically the whole output of dyes. She could readily undersell other manufacturers. Her great industrial centers at Essen, and in other near-by places on the Rhine, were amalgamated into one great body. This group had a trusted agent in the United States, Hugo Schweitzer by name. Schweitzer was highly educated and held in good esteem by his fellow chemists in this country. I regarded him as a particular personal friend.

The publication of the order relative to the coal-tar dyes was a great blow to the German product, and very soon Mr. Schweitzer came to Washington to see what could be done. He invited me to lunch with him. We discussed the ban on coal-tar dyes, and I explained to him as best I could the care with which we had considered these dyes and the standards of purity that would have to be met under the ruling. Doctor Schweitzer said to me:

"The Seventh International Congress of Applied Chemistry will meet in London in the spring of next year, 1909. It is anticipated that the congress will be invited to meet for its eighth session in the United States. I am in close touch with the chairman and the English chemists who are members of this association and I am aware that they are all anxious to accept this invitation which it is presumed will come from this country. I have considerable influence with the organizers of this congress, and its past presidents. Your ac-

tivities as a member of the congress have led to your consideration as the proper person to preside at the American meeting at the session of 1912. I now wish to say that I will be able to secure to you this very highly coveted office on condition that you abandon your position in regard to the introduction of coal-tar dyes into foods."

If the boiler of the Willard Hotel where we sat had exploded I could not have received a more dreadful shock. Rising in my place I said:

"Doctor Schweitzer, I did not know you invited me here to insult me. Good day, sir!"

The sequel of this interview is of interest. Through my activities as a member of this international organization I secured a resolution from Congress authorizing President Taft to invite the Eight International Congress of Applied Chemistry to meet in the United States in 1912. Mr. Elihu Root, secretary of state, issued a commission to me to carry the invitation to London and present it to the meeting. There were about fifty American chemists present and on the first day of the congress they met and nominated me for the next president. I had not sought the office, but appreciated the honor they planned to confer on me. I asked the Honorable Whitelaw Reid, our ambassador at the Court of St. James, to introduce the motion to select the United States as the place for the next meeting. He at first refused but agreed to make the opening address if I would

follow immediately and present the invitation. We did this and the vote was unanimous for the United States as the next meeting-place. But I was not elected president. Sir William Ramsay, president for that session, called me to his room and informed me that it had been decided that a chemist who was a manufacturer should be chosen, and that the committee had selected Dr. William H. Nichols for the honor. Afterward I learned that Doctor Schweitzer had come over several weeks before the session and had spent the whole time visiting the organizing officers and urging them not to appoint me as the next president! If that was revenge, he should have been satisfied. The meeting in the United States in 1912, owing to the ability, popularity and tact of Doctor Nichols, was one of the most successful that had ever occurred.

BROT KRANKHEIT

by
(Dr. X) M.D.

I have recently observed many patients that have improved subjectively and objectively within a period of a few weeks after the elimination of bread and chemically treated flour from their diets. Some of these patients had chronic systemic lupus erythematosus, and others had chronic eczematoid dermatitis of unknown etiology.

On the hypothetical assumption that bread and flour, as consumed in this country, contain one or several noxious products that could be either a major or contributing cause of illness, we are continuing these investigations.

Despite the fact that in 1947, three separate and distinct articles on the use of agene (nitrogen trichloride) appeared in the November 22 issue of the J.A.M.A., little has appeared since in the American literature on this subject. Nitrogen trichloride for twenty-five years or more prior to 1947 was the primary maturing agent used by millers of white flour. About this time its toxicity for dogs, producing convulsions and death, was clearly demonstrated. This was considered sufficiently important that a special article by B. P. Dunbar, Commissioner of Food and Drugs, of the Federal Security Agency, in this issue of the J.A.M.A., recommended a reduction in the use of agene to a minimum, and supposedly seven years later, this has been accomplished.

In its place chlorine dioxide (Dyox) is now the commonly used maturing and bleaching agent for commercial flours. In the same issue of the J.A.M.A. (1947) an article appeared by Newell, Erickson, et.al., from the University of Wisconsin, demonstrating that nitrogen trichloride treated flours produced canine hysteria or running fits or convulsions in dogs, but that other oxidizing agents, such as chlorine dioxide, benzoyl peroxide, chlorine, nitrogen peroxide, and methyldichloromine, could be substituted without harmful effect on experimental animals.

In the same issue of the J.A.M.A. an article by Capt. Maurice Silver, et. al. indicated that agene or nitrogen trichloride for the previous twenty-five years has been used in 90% of all the white wheat flour produced in North America and England. Up to this particular time, apparently there had been no report of the noxious effect of agene in humans, either in this country or in England.

The detailed report, therefore, which appeared in the March 21, 1953, issue of "The Lancet" by Sheldon and Yorke, in which they beautifully described and graphically incriminated as the etiological agent in a single case of widespread dermatitis coupled with profound depression in the same patient, bread made from flour treated with both agene and chlorine dioxide is of paramount importance: An abstract of this report is available in the

Yearbook of Dermatology and Syphilology, by Sulzberger and Baer. It is fitting that this abstract is the first under the category of "Drug Eruptions" and is to be found on page 160. This particular case report is important, not only because it demonstrates clearly the noxious effect of maturing agents when added to flour and consumed by humans (nitrogen trichloride and chlorine dioxide) but it also centered the attention of Lord Teviot on the broad general topic of adulteration of food, which he brought to the attention of the House of Lords in England, June 10, 1953, and was published in the British Medical Journal, June 20, 1953.*

Particularly significant is the fact that even though agene-containing flours were known to be toxic for experimental animals in 1947, in both England and this country, steps were taken only gradually in both countries to eliminate the use of this particular maturing agent. Even today we have only partial assurance that the use of agene has been completely discontinued by the milling industry in this country or in England.

Despite the fact that I have been assured by representatives of a company that makes and sells both nitrogen trichloride and chlorine dioxide to the major millers of this country that it is doubtful that agene-treated flours are in use in this country today, he freely admitted that it is still used by some millers in the treatment of flour for the export trade. The use of agene, or nitrogen trichloride, is preferred by the milling industry to the use of chlorine dioxide because it yields a better flour for commercial breadmaking purposes, and it is cheaper to use than chlorine dioxide. When one considers the keen competition that exists in this country between the large chain bakeries, one is tempted to speculate as to the possibility of agene-treated flour still being used by some large commercial bakeries.

If it produces a loaf of bread that looks better, particularly if the bakers can buy the flour a few cents cheaper per sack, treated with agene rather than chlorine dioxide, the inference is clear!

Considering these factors, it is entirely possible that even today some of the bread consumed in the United States may contain the noxious product produced by agene. Its use by the milling industry conceivably could have been reduced from 90% to 10% during this period of readjustment from 1947 to date. Furthermore, certain types of grain cannot be satisfactorily used for the production of flour by the use of other oxidizing agents, presumably in most instances chlorine dioxide, whereas a perfectly satisfactory flour for baking purposes would result from these grains if treated with agene.

In addition to these possibilities, the flour chemists in this country and many other interested parties in this country and in England are firm in their belief that agene-treated flours are innoxious to human beings.

A feeble attempt to prove its lack of noxious effect resulted in an article

**Note the close proximity of dates relative to the spoken and the printed word.*

in which a sum total of three epileptic patients were fed on agene-treated bread for a period of time. It was stated that all of these three patients ate one half their own body weight of this particular bread and that there was no increase in the tendency to convulsions in these three patients. Based on this experiment, it was concluded that agene-treated flours and bread made therefrom was innoxious for the human animal and that its toxicity was specific only for the dog, the rabbit, and the ferret. Significantly "questionable toxicity" is admitted in monkeys.

The toxic product produced by agene-treated flours has been crystallized by Moran and his colleagues at Saint Albins in the Cereals Research Station of the Research Association of British Flour Millers. This work was done by Bentley, McDermott, Pace, Whitehead, and Moran, and reported in 1950 in "Nature". Further investigation on the convulsive effect of this crystalline substance was reported in "Nature", May 12, 1951, by the Research Department of Boots Pure Drug Company, Ltd., Nottingham, by Broom, Gurde, and Harmer. Interestingly enough, both English investigative groups used rabbits weighing from 600 to 800 gms. as the experimental animal. The Saint Albins group reported that the convulsive dose in these rabbits was 2 mg. of the levo rotary compound and 5 mg. of the dextro levo rotary compound (90% convulsant). The Nottingham group, in repeating these experiments, found that some rabbits tolerated as much as 18 mg. of the dextro levo rotary compound and that in others the convulsions in rabbits were delayed. The Nottingham group of investigators concluded that the reason several times the dose of the crystalline noxious substance was required to produce convulsions in rabbits in their series, as compared with the Saint Albins series, was that for their rabbits in Nottingham the diet included green stuff, whereas the Saint Albin rabbits had none of this in their diet. Furthermore, the green stuff contained a protective substance quite possibly levo glutamine.

One is prone to speculate at this particular point that possibly bread contains a noxious substance, which in small quantities has a marked adverse effect on patients with systemic lupus erythematosus. I can recall over twenty years ago a report on the beneficial effect of a diet used in the treatment of lupus erythematosus consisting almost exclusively of green vegetables, reported by Ayres and Anderson. In addition, the Welsh treatment for lupus erythematosus, using large amounts of Vitamin E and calcium pantothenate in the treatment of lupus erythematosus might conceivably offer some protective mechanism against the toxicity of substances found in bread in patients with lupus erythematosus. Admittedly, this may be specious reasoning, but I believe it is justified considering our lack of knowledge with respect to the cause and management of lupus erythematosus and other illnesses that seem to have a systemic origin or unknown identity.

CASE REPORT: We have had a white female, age 27, under our care and observation for the past three years. The diagnosis of chronic systemic lupus erythematosus has been confirmed on two occasions by demonstration

of the L. E. phenomena in two different institutions. Three episodes occurred that were, in our opinion, rather significant. The first occurred before coming under our care at which time she was given ACTH therapy, which had to be promptly discontinued because of its paradoxical effect. During this episode she almost died. The second interesting episode was that during a period of ten months, changing her residence from Dallas to Colorado Springs, she made marked objective and subjective improvement with practically no supportive therapy while in Colorado. Upon returning to Dallas, within two weeks most of the usual symptoms recurred, including elevation of temperature, extreme weakness, fatigue and muscular aches and pains. A recent cautious attempt at therapy with hydrocortisone, given orally, 40 mg. daily, again had to be discontinued on the third day because of an exacerbation of all symptoms and signs, extreme prostration and inability to turn over in bed. These symptoms disappeared within five or six days after the cessation of hydrocortisone therapy. Subsequently, upon the elimination of all bread and flour from her diet recently this patient improved within a period of three days, subjectively and objectively, in a dramatic manner unprecedented during her three years' illness. She volunteered information in retrospect that eating of prepared biscuit had on three occasions, within 12 to 24 hours, necessitated complete bedrest because of exacerbation of temperature and pain. Both the patient and I are completely convinced that in her particular case there is some noxious agent in bakery bread and flour to which she promptly (within 24 hours or less) reacts adversely, and from which she recovers spontaneously in a period of three to eight days. Unadulterated wholewheat flour muffins were tolerated by her without ill effect.

An article by P. J. Costa and B. D. Bonniecastle of the Department of Pharmacology at Yale University appeared in "Archives Internationalis de Pharmacodynami et de Therapy", 1952, September 15 issue, page 330. These investigators used dogs in their studies and produced convulsions by the oral administration of agenized zein in 100% within two days. There were 18 dogs in the control series. They found that desoxycorticosterone acetate administered daily, and progesterone administered daily minimized the convulsions produced by the agenized zein. In addition, the daily administration of ACTH and Cortisone intensified the convulsive seizures and increased mortality rate in their dogs. They further state that status epilepticus has been produced by both ACTH and Cortisone in non-epileptics and that dilantin sodium produces a degeneration of the adrenal cortex in rats and suggested that its action in human epilepsy could be by depressing the adrenal cortex. It appears from these studies that the steroid hormones, at least in dogs, intensifies the convulsive effect of the noxious product produced by agene.

If part of the symptomology of systemic lupus was produced or aggravated by noxious products obtained from eating bread in the patient described above, there seems to be a logical explanation for the paradoxic effect of steroid therapy in her particular case.

Despite certain experimental data that tend to exonerate chlorine dioxide

as being provocative of producing a noxious product when used as the maturing agent in flour, it is a little difficult to exonerate this particular oxidizing agent completely. F. H. Lewey from the Laboratory of Neuroanatomy and Neurosurgery of the Graduate School of the University of Pennsylvania published in the "Journal of Neuropathology and Experimental Neurology" in 1950, page 396, his experiments using agene and chlorine dioxide-treated flours fed to dogs. The dogs died from convulsions following the agene-treated flour ingestion and he demonstrated a liquefaction necrosis deep in the cortex, particularly in the region of the Hippocampus, and in addition changes in the cerebellum, microscopically. He noted that chlorine dioxide was not toxic for dogs, even when used in the 100 times normal amount. These negative findings in dogs supposedly exonerating chlorine dioxide which now purportedly is the commonly used maturing agent for flours in this country have two weaknesses. The case reports in the "Lancet" by Sheldon and Yorke clearly indicated that all of the symptoms were reproducible when bread was eaten that was made from flour that contained only chlorine dioxide as the maturing agent. In addition, one must remember that it took over twenty-five years of the general use of agene before the scientists of this country and Great Britain discovered that a noxious substance was produced which caused running fits in dogs (canine epilepsy-canine hysteria), as of 1947. In addition, six more years elapsed before the first evidence of the noxious effect in human beings was reported by Sheldon and Yorke. Perhaps it will take another 25 or 30 years to completely evaluate the safety of chlorine dioxide as a maturing agent in flour. This thought has been implied by several investigators in this field.

SUMMARY

Until the exact status of possible noxious or poisonous substances found in bread and flour today can be completely evaluated it seems to be a wise and simple expedient to eliminate bread and flour from the diet of patients with lupus erythematosus and other illnesses in which systemic toxins are suspected. This can easily be done for a test period of from two to three weeks, with the possibility that subjective and objective improvement will result in such a definite manner that it will serve as a guide to management of this intricate and puzzling problem in medicine.

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