Mike got quite a few votes for his 40 per cent cut at least partly because everybody likes Mr. McGovern and the new Senators, who didn't go through the long battle to establish American power in Europe and Asia, tend to think the detente with Moscow and Peking is a reality instead of merely an experiment.

Somewhere in this debate, there has to be a confrontation, particularly, with the leader who wants nothing less than a 40 per cent cut in the overseas forces and the Administration's forces in order to keep force levels overseas where they are.

The Administration won this latest battle with the Senate, and can probably keep on winning it all the way to the White House, at least for a while, but the mood of retraction on the Hill is getting stronger all the time, and the confidence between the White House and the Congress, after Vietnam and Watergate, is getting weaker all the time. And this is a problem, particularly since the Administration's negotiations with the Allies, on the future of the NATO Alliance, with the Soviet Union on the balanced reduction of both Soviet and U.S. forces in Europe.

This the Senate knew, but it voted for a 40 per cent cut anyway, and reversed itself only after threats the votes were made clear later in the day. In the end, the arguments of the Administration prevailed. Specifically, five or six more votes were switched, not by the arguments of the White House, but by the arguments of a general, who spoke to the two eloquent voices out of Moscow, appealing to the United States not to make one-sided deals with the Soviet Union, without getting the moderate concessions from the Communist side.

[From the San Diego Union, Sept. 19, 1973]

DEFENSE IS LAST PLACE TO TIGHT

Another "guns or butter" debate is warming up in Congress with consideration of a $20.4 billion military procurement bill. Once again we are caught up in the difficulty of reconciling our political process with the needs of national security. While politics and personalities can change the relative strength or weakness of different points of view in Congress, those changeable conditions have nothing to do with the number of men and weapons actually necessary to defend our country.

Congressional defense cutters can no longer cry for an end to the Vietnam War as a means of producing billions to be spent on domestic programs. This leaves only the defense budget as a target for cuts in the Pentagon. The idea that military spending in the neighborhood of $80 billion is too much is in "peace" is becoming dangerously popular with senators and representatives whose favorite programs are waiting to be funded but cannot be fitted into the federal budget under the ceiling which President Nixon is determined to maintain.

The Senate Armed Services Committee has concluded that the country could cut by another 200,000 men from our armed forces. This would reduce them even lower than the 2.2 million level projected by the Defense Department after a series of base closures and consolidations of military units announced earlier this year. The argument that these new reductions would not be for force rather than combat forces simply ignores the balanced relationship which must exist between the right size of logistics and communications network that must back him up if he ever has to fight.

The axe is also being cut at some long-term development programs as the B-1 bomber and the Trident missile submarine. The argument here seems to be that the country can no better live with these advanced weapons, and that defense in the air, the sea, or the ground, we need be in no hurry to develop them. This assumes that the Soviet Union is equally complacent with the United States in its capability of its strategic weapons, We know, however, that just the opposite is true. The Russians are pouring resources as an unprecedented scale in their program, and spending both their strategic and tactical forces.

The level of U.S. troops stationed in Europe and the Far East is often a bone of contention. It cannot be if we expect any results from the current effort to negotiate a mutual agreement with the Warsaw Pact Organization and the Warsaw Pact.

The United States is all the more important to the United States and the European allies, who are more possible now, will be looking for money to divert to domestic spending. The fact is that there to be trimmed.

FOOD ADDITIVES AND HYPERACTIVITY IN CHILDREN

Mr. RECALL, Mr. President, since early this year I have been in communication with Dr. Ben Feingold, chief-emeritus, department of allergy of the Kaiser Foundation Hospitals and Permanente Medical Group, with respect to hyperkinesis or hyperactivity.

This is a problem which is conserva-
tively estimated to involve 3 percent of the elementary school population of our country. However, the incidence of hyperkinesis varies greatly from community to community. For example, in south San Francisco a conservative estimate indicated that 5 percent of all pupils were hyperactive, while in Monroe County in upstate New York, the estimate is as high as 25 percent. The California Association for Neurological Handicapped estimated in the past 10 to 12 years the incidence of hyperactivity among schoolchildren in California has risen from 2 percent to an average of 20 to 25 percent and in some cases 40 per cent of the entire school population.

Dr. Feingold has presented a possible link between hyperactivity in children and the growing use of food additives. By placing children on a diet that is free of artificial food colors and flavors, and food colors, Dr. Feingold has been able to achieve dramatic results. Even more dramatic was the ability to trigger a return of hyperactivity, sometimes in a matter of hours, by giving artificial substances back into the diet.

At the present time many hyperactive children are being treated with drugs. If hyperactivity can be controlled simply by changing a child's diet, we certainly should find it preferable to move in that direction. And if there is a link between artificial food additives and hyperactivity, then the entire use of artificial colors, flavors, and other additives must be examined.

Mr. President, next month the Senate Labor and Public Welfare Subcommittee on Health contemplates hearings in the february 1973.
Dr. Feingold's work, urging that he be one of the earliest witnesses called. I am particularly interested in Dr. Feingold's work because of my deep concern about the reading problem in this country and there is indication that many hyperactive youngsters also experience reading and other learning difficulties. As Dr. Feingold told me in his most recent letter: 

I feel confident that through a broad-based program involving the education of parents, as well as educators, teachers, psychologists, and other professionals regarding the potentials of management with the salt-free diet, we can within a very brief period, perhaps a year or 18 months, correct a considerable percentage of the ELD among the school children of this country.

I have been in contact with the Food and Drug Administration and the National Institute of Mental Health on this matter and I am hopeful that we can generate support for Dr. Feingold's research and efforts.

Mr. President, in the Washington Post of October 29 appeared an excellent article on this subject by Mr. Morton Mintz. Mr. Mintz gives consent for a copy of this article to be printed in the Record and also a copy of a recent address given by Dr. Feingold before a symposium on food health in London, England, last month, be printed in the Record.

I also ask unanimous consent that my letter to Senator Kennedy be printed in the Record.

There being no objection, the material was ordered to be printed in the Record as follows:

GROUP LANES FOOD ADDITIVES TO HYPERACTIVITY IN CHILDREN

(By Morton Mintz)

A medical specialist says that artificial colors and flavors in foods and beverages may be an important cause of a serious behavioral disorder believed to afflict millions of school children.

He offers his theory on experiments in which afflicted children come to behave normally when put on a diet free of synthetic colorants and artificial flavors, and returns to their maladjusted condition when they violate the diet by so much as a bite.

The specialist is Dr. Ben Feingold of San Francisco. He is chairman of the department of allergy of the Kaiser Foundation Hospitals and Permanente Medical Group.

The disorder, called hyperkinesis or hyperactivity, interferes with a child's attention span—leading to reading, spelling and other learning difficulties—and is reflected in disruptive and even compulsively aggressive behavior.

The disorder occurs almost exclusively in boys. Usually only one child in a family is affected.

Hyperkinetic children generally—but not always—are genetically predisposed to allergies. Usually they have normal or high IQs. And, says Feingold, they ingest substantial amounts of chemical colors and flavors, as shown by diet diaries.

Frequently, physicians prescribe for hyperkinetic children drugs that in adults are stimulants. The drugs are amphetamine and Ritalin, the trade-name of the CIBA-Geigy Corp. for methylphenidate hydrochloride. Feingold has found that sharp increases in the disorder and in learning difficulties over the last 10 years have occurred in parallel with increases in the dollar value of the production of artificial flavors and soft drinks.

There are 2,500 to 3,000 flavors—some of them secret chemical formulations—but only 11 basic synthetic chemicals, Feingold says.

The colors and flavors constitute about 80 per cent of all food additives. They proliferate in products from condiments and such as soft-drink powders, the physician says.

Feingold reported initial findings to an American Medical Association meeting in New York City in June at an international food symposium in London. In September. He said in a phone interview with the Washington Post that he is now preparing an article for the British Medical Journal, published by the British Medical Association.

At the time of the AMA meeting, Feingold said, he had achieved "dramatic results" with the special diet in 15 to 28 of 26 hyperkinetic children in his practice. Some of the children who did not improve did not stick to the diet, he said.

Currently, the allergist told a reporter, he has successfully treated more than 50 children using the diet. In some cases, Feingold and his associates have linked growing of the children.

Feingold emphasized that the special diet, which doesn't always work, doesn't always work, should not be prescribed indiscriminately. Sometimes it works in harness with standard allergy controls, he said.

Feingold told of a 7-year-old boy who had been hyperkinetic during much of his life. No therapy worked. But after a few weeks on the special diet, the boy was well adjusted at home as well as at school.

The physician said that even a slight violation of the diet can cause symptoms of hyperkinesis to emerge within a few hours and to persist for 24 to 48 hours.

In view of our ability to note these behavioral disturbances in children to food additives by "turning on" and "turning off" these adverse clinical responses," Feingold told fellow allergists at the AMA meeting, "we raise the following question: "Is it possible to attribute the increase in hyperkinesis and learning difficulty...to the increased consumption of these chemicals in our foodstuff?"

Feingold cited a government study indicating that in the last 10 years the incidence of hyperkinetics in certain school populations increased from 2 per cent to 20 to 22 percent and, in some cases, to 40 percent. He said no correlation has been shown with rates of affluence and socio-economic factors.

The dominant occurrence of hyperkinetics in boys and its absence among a victim's brothers and sisters may offer clues for researchers, but "we really do not know" the explanation, Feingold said.

Do the additives ingested by the mother during pregnancy affect the unborn child? the allergist wonders.

He points out that additives, like drugs, can cross the placental barrier to the fetus and affect its development. It is at least conceivable, he says, that increased consumption of food additives by pregnant women could be an "important factor" in conditions that may react to additives in childhood with hyperkinesis.

An average child's breakfast today may include foods laden with enticing flavors and colors, including cereals, beverages, pancakes made from a mix and frozen waffles tinted by a chemical called tartrazine, Feingold said.

"A conscientious and concerned" mother may give her child chewable vitamins. These, too, contain chemicals.

The child goes off to school where, at lunch, he gets more flavorings and colorings in hot dogs, luncheon meats, ice cream and beverages other than milk.

"Is it any wonder that our children are jumping and failing to learn?" Feingold asked at the AMA session.

Food producers, school authorities, or school authorities, may try to cope with the possibly chemically-created disorder by dosing the child with more chemicals in the amphetamine derivatives of Ritalin. These drugs, too, are dyed, Feingold said. Some children also are given stronger tranquilizers that, again, are artificially colored.

How many children get the amphetamines and Ritalin, which CIBA-Geigy has heavily promoted for hyperkinesis, is unclear.

The number estimated in 1971 by the National Institute of Mental Health was up to 300,000. The current estimate made by CIBA-Geigy for Ritalin alone is 260,000.

A company spokesman said Friday that the firm was trying to clarify the figures in the light of testimony given at a Senate hearing in July, 1971, by CIBA-Geigy president E. J. O'Brien.

He said that the firm in 1970 sold 243 million Ritalin tablets, that some 2 million persons are now using the drug. "Its use for hyperkinesis is approaching 50 per cent of the total production." In the same year, Ritalin accounted for 2 million in sales, or 15 per cent of the firm's total.

Feingold's research associates were Drs. Donald G. Corman, Allen Friedman, Richard W. Schaller, and Eliaman V. Lee.

In a related development at Georgetown University, researchers have reported on a laboratory study of some additives used to prevent spoilage of beverages and canned and frozen foods by disease-producing bacteria.

The additives act as strongly against animal and human cells as against the germs, the study indicates, but further investigation is necessary, "but present evidence would urge caution in eating large quantities of food containing such additives," said microbiologist Thanapath Sreevalan.

The Georgetown study, done in collaboration with the National Institutes of Health, showed that additives were shown to inhibit the growth of cells, to change their shape, and in some cases to destroy them.

The results, reported in the Proceedings of the National Academy of Sciences, have also shown that the chemicals did not act selectively merely against the bacteria that cause spoilage, but were at the same time anti-cell agents.

There may be a mechanism whereby the stomach tissues in a whole organism is able to detoxify the compounds in humans, but even in that case, ingesting too much might overload the mechanism and still pose a danger," said Associate Prof. Sreevalan.

He said that most anti-bacterial food additives are fatty acids that, in the concentrations in which they are used to prevent spoilage, have not exhibited "any gross animal or human toxicity."

All human cells in the study are inhabited by these compounds, as well as by nitrite. For that reason, the large consumption of foods containing the compounds "potentially interfere with the function of some human cells," Sreevalan said. The same would apply to the same, he said. For example—that also are fatty acids, he said.

The study was done with cells from human liver and intestines and with chicken embryos grown in laboratory cultures.

Sreevalan's co-workers were Elliott Ginsburg, Daniela, Salomon, and Dr. Ernest Press.

HeinOnline -- 119 Cong. Rec. 35402 1973
The flavors and colors represent three out of fourteen categories that constitute a list of intentional food additives compiled in 1965 by the Food Protection Committee of the United States National Science Foundation and the National Research Council. (1) It is important to note that of the 2,704 chemicals listed in this report, the flavors and colors constitute over 80 per cent of the total.

Colors and flavors make no contribution to the nutritional value of food. However, since both flavor and color are very important factors in determining consumer acceptance, they are frequently interlinked. As a result, they play identical and important roles in the development of synthetic products designed to be used in marketing food products, which in turn may gradually, yet at times very importantly influence the health and behavior of man.

Prior to 1958 when dyes were originally developed from coal tar derivatives, practically all colors added to foods were of natural origin. (2) However, following the development of synthetic colors, there has been a constant increase in the utilization of the synthetic products by the food, drug and beverage industries, so that over two million pounds of synthetic color materials are added to our food supply annually. This represents over 90 per cent of all the food coloring used, leaving 10 per cent from natural sources.

The various synthetic dyes are derived from four basic coal tar derivatives. (3) Basic coal for Cerieotestes Triphenylmethane, Azo, Xanthene, Sulphated indigo. Test samples from each class have from time to time exhibited adverse effects. Derivatives of triphenylmethane, the dyes and indigo have known carcinogenic properties, while xanthene products manifest mutagenic possibilities.

By 1900, in the absence of regulations, there were approximately 80 dyes used in the United States for food coloring. (4) In many instances dyes from a batch used for dyeing cloth were used for food. By 1906, when the first regulations were instituted in the United States, the list was reduced to seven products, which were considered to be of known composition and studied physiologically.

The short term evaluation initially applied to the certification of synthetic dyes is no longer reliable with the result that the approved list of colors is constantly undergoing revision. The term usage of a dye, toxicity and carcinogenicity frequently become manifest, which leads to either exclusion or provisional listing. Again, the short term evaluation of a new product is substituted. This constant practice of deletion and substitution merely reflects the inherent potential of coal tar dyes to produce adverse effects—a situation that will no doubt persist so long as coal tar derivatives are used for food processing.

The deficiencies of short term evaluation are well expressed in a report on food colors issued in the United Kingdom as early as 1964. To quote, "We cannot accept the contention that, because coal tar colors have been in use for many years without giving rise to complaints of illness, they are, therefore, harmless substances. Such negative evidence in our view fails to constitute the long term and continuing effects. Any chronic effects would be insidious and it would be difficult if not impossible to attribute them with certainty to the consumption of food containing coloring matter."

The situation with regard to the reliability of colors as expressed in this statement explains in great measure the difficulty various public health authorities are having in arriving at a mutual agreement as to the authorization of colors to be incorporated into food products.

The following table which lists the synthetic colors permitted in several countries illustrates this situation.

<table>
<thead>
<tr>
<th>Dyes</th>
<th>Great Britain</th>
<th>Australia</th>
<th>Canada</th>
<th>Denmark</th>
<th>Finland</th>
<th>Germany (W)</th>
<th>India</th>
<th>Norway</th>
<th>Spain</th>
<th>Sweden</th>
<th>Switzerland</th>
<th>South Africa</th>
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<tr>
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<td>Carmoisine</td>
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<td>Oil yellow 4G</td>
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<td>Green S</td>
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<td>Indigo carmine</td>
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<td>Cheddar orange</td>
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<td>Black 2G</td>
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<td>Black C</td>
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</tbody>
</table>

1 For coloring wheal, halved or scored fruit only.

The following table lists the U.S. Certified Colors:

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<tr>
<th>COAL TAR DYES (U.S. FD &amp; C Colors)</th>
<th>Tetramethylamine dyes</th>
<th>Blue no. 1 (Brilliant Blue)</th>
<th>Green no. 3 (Fast Green F.C.F.)</th>
<th>Violet no. 1 (Sulpho Violet 4B)</th>
<th>Xanthene</th>
<th>Red no. 3 (Erythrose)</th>
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<td>Fuchsine</td>
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<tr>
<td>Scarlet</td>
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<tr>
<td>Sulphated indigo</td>
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<td>Azo dyes</td>
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<td>Orange B</td>
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<td>Yellow no. 5 (Tartrazine)</td>
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<td>Yellow 6B (Tartrazine)</td>
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| The necessity to restrict to a rather limited number the chemicals used for color is added by the fortuitous circumstance that color perception functions through a single organ—the eye, which makes the chemistry and measurement straightforward through the psychology and acceptance of color may be complex. As a result, the demands of the range. With long term exposure, for a great variety of hues, tints and quality can be met by blending a small number of chemicals.

Other than this, the eye experiences a composite sensation consisting of the concurrent reactions of the taste and olfactory re-
Initially, it was believed that food additives served as hazards (i.e., incomplete antigens) to conjugate with body proteins to form the antigens which have the capacity to evoke allergic tissue responses. However, the studies on aspirin by Farr (7) and Small (8) in the United States supported not only the non-immunologic nature of aspirin sensitivity, but emphasized the relationship observed clinically between aspirin intolerance and adverse reactions to tartrazine (FD & C Yellow No. 5), a widely distributed azo food coloring. The observations of the British allergist, Vane (9), strengthened this concept. Vane reported that aspirin and indomethacin, although structurally unrelated, inhibit prostaglandin synthesis at comparable concentrations, activities of a number of body substances. These observations suggest that the adverse reactions to these drugs are pharmacologic rather than immunologic in nature. Tartrazine (FD & C Yellow No. 5), although structurally unrelated to aspirin can induce similar adverse clinical patterns in aspirin sensitive subjects. The converse is also observed. This clinical interrelationship in the allergic person may be important in interpreting the clinical response and in programming the management of adverse reactions to these substances and colors based upon a salicylate-free diet. The salicylate-free diet was originally designed for the aspirin sensitive patient who failed to respond following the elimination of the drug, but did show a favorable response when all foods with a natural salicylate radical were excluded. As designed initially, the diet listed only foods with a natural salicylate radical (10). Foods containing NATURAL SALICYLATES

<table>
<thead>
<tr>
<th>Fruit</th>
<th>Natural Salicylates</th>
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<tbody>
<tr>
<td>Apricots</td>
<td>Berries—Blackberries, Strawberries, Raspberries, Gooseberries.</td>
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</table>
| Grapes—Raisins, Wines, Wine Vinegar. Nectarines. Peaches. Plums. Prunes. Almonds. Apples. Oranges. Quince, and Pickles. Tomatoes. In some patients even this exclusion failed to control symptoms. It was recognized that tartrazine (FD&C Yellow No. 5), although unrelated by chemical structure, may induce some salicylate sensitive patients. Following the exclusion of tartrazine, some of the failures, but not all, responded. Accordingly, on the basis of the clinical relationship between aspirin and tartrazine (FD&C Yellow No. 5), it was hypothesized that among the thousands of food colors and flavors incorporated into our food supply, there may be other additives, although unrelated chemically, which may induce salicylate-like reactions. On the basis of this premise, the so-called salicylate-free diet was expanded to include not only all foods containing natural salicylates, but also all sources of artificial flavors and colors, with and without a salicylate radical. Since flavors and colors constitute approximately 80 per cent of all food addiitives, striking by definition all food addiitives, striking by definition to the diet will exclude the majority of all food additives. In view of the complexity of the problem, the necessity for the empirical exclusion of all artificial flavors can be readily appreciated. The conditions successfully treated with the salicylate-free diet are indicated in the following table:

ADVERSE REACTIONS INDUCED BY FLAVORS

Respiratory—Allergic rhinitis, nasal polyps, cough laryngeal edema, and asthma. Skeletal system—Arthritis with edema. It is important to note that practically every major body system is susceptible to injury by added food additives. Usually, only a single region is affected, but it is not uncommon for a mixture of these patterns in the same individual. Of the various clinical patterns induced by the adverse reactions to artificial colors and flavors perhaps the most important and also the most dramatic are the behavioral disturbances in children. The exact incidence of this is not known, but figures vary from a conservative 6 per cent of all pupils in the South San Francisco, California school system to 25 per cent in Monroe County in upstate New York. The California Association for the Neurologically Handicapped estimates that in the past five years the incidence of R-LD among the school children of California has risen from 2 to per cent to an average of 20 to 25 per cent of the entire school population. These figures have no relation to socio-economic background. The great variations can no doubt be attributed to the behavioral syndrome, Minimal Brain Dysfunction (MBD) and Minimal Neurological Damage (MND), as these children are frequently labeled. Another factor that influences the statistics on incidence is the failure to recognize that hypersensitivities and learning difficulty are commonly interrelated and are actually different aspects of an identical problem. This is particularly true of dyslexia, a generic term applied to a whole category of reading and spelling disabilities. Since reading disabilities among children are frequently an expression of the behavioral disturbance induced by hyperreactivity, it is interesting to refer to some figures on reading difficulties in the United States. On March 22, 1973, in a presentation before the United States Senate by Senator Bentsen from the State of Texas and the following statistics were reported:

It is estimated that some 18½ million adults are functional illiterates; 7½ million elementary and secondary school children are in severe need of special reading assistance; throughout large urban areas 40 to 50 per cent of its children are reading below grade level; 20 per cent of the 700,000 students who drop out of school annually are classified as poor readers; and The massive reading difficulties revealed in these statistics have been compiled by surveys of teachers and principals alike. An additional alarming statistic was recently released from the Dallas, Texas school system. At the commencement throughout the city of Dallas recently (June 71973), anywhere from 500 to 1,000 of Dallas' 9,000 students were absent from school due to be handbilleddfed they could not read. Although statistics outside of the United States are not presently available, the overwhelming response from many countries to a recent presentation on R-LD would suggest that similar groups found in many countries throughout the world. It is interesting to note that a graph produced by the increased production of artificial flavors and soft drink beverages of various types parallels a graph for the increased incidence of R-LD among the school children of the U.S. for the past ten years. The clinical pattern of the behavioral disturbance is chiefly that of hyperreact
He was unable to focus his attention on any project for more than 2 or 3 hours at a time.

At 3 years and 6 months the child was placed on Ritalin following which he seemed less disruptive, exhibited a degree of "self control" and seemed better able to cope with routine demands.

At 5 years he started school. He exhibited great learning difficulty involving the alphabet and numbers. His classroom behavior was such that he had great difficulty socializing with his peers.

At 7½ years Steilastine (a tranquilizer) was added to Ritalin, in order to control a greater degree his daytime behavior, particularly at school, when Ritalin was not effective. Steilastine also aided in improving the anger, irritability as well as the constant minor muscular movements of the child.

May 30 to July 2, 1973 the child was given allergy shots which proved negative.

July 2, 1973 the child was still receiving Ritalin 10 mg four times daily, or 40 mg per day, and Steilastine 5 mg twice a day, or 4 mg daily.

A salicylate-free diet was ordered for the child.

July 8, 1973, six days after starting the diet, the mother reported a "changed child"—more cooperative, more in tune with his parents and peers. He is less distractable. The Ritalin was reduced to a single dose at 7 p.m. and Steilastine at bedtime only.

July 15, 1973 at 7 a.m. the child ate a banana doughnut which was not permitted on his diet. By 1 p.m. the child became hyperactive, argumentative, and extremely difficult to exercise self control.

July 16, 1973, a.m., the child returned to his "new normal" established by the diet.

July 17, 1973 Steilastine was discontinued. A single dose of Ritalin, 5 mg. at 7 a.m. was continued.

July 23, 1973, 21 days after starting the diet, all medication was stopped.

July 25, the child and his family went to a party at school; ate some candy at 10 a.m. At 12 noon the hyperactive behavior returned and persisted until July 29, also a hot humid day.

August 13, 1973 the child was doing extremely well.

The descriptive characteristics of the clinical pattern are as follows:

1. Marked hyperactivity.
2. Short attention span—jumps from one activity to another.
3. Fidgetiness.
4. Irritability.
5. Unpredictable and unmanageable.
6. Quick tempered, explosive and pensive.
7. Tolerance for failure and frustration is low.
8. Exceptionally clumsy—poor coordination; eyes and hands do not seem to function together; has trouble buttoning.
9. Has difficulty drawing and writing.
10. Can't seem to keep from touching everything and everyone around.
11. Normal or high IQ but fails at school.

In addition, it is important to note that the involvement affects boys almost exclusively and that rarely more than one child in a family is affected.

The cardinal symptoms observed following management with the salicylate-free diet include:

1. The rapid, dramatic change in behavior. Although the history of hyperactivity with associated disturbances are usually of many years duration (3 to 4 years) and at times, dating back to infancy, a favorable response is observed within days after instituting the diet. The child loses his hyperactivity, irritability, argumentation, and becomes well adjusted to his environment. The sleep pattern improves.
2. Drugs which have been administered for several years can usually be discontinued after about 2 to 3 weeks of management and rarely beyond one month.
3. Improved scholastic achievement is also dramatic. Within a single quarter at least a 1 grade improvement in his reading and writing abilities as well as with numbers. This is consistent with the observation that these children have always normal or a high intelligence.

Since the incidence of an allergic diathesis among the human population is estimated to be at least 20% it is not surprising that allergy is not an uncommon comitant of H-LD. Although adverse reactions to food additives have been reported, allergy does not seem to be a frequent primary cause of hyperactivity.

When allergic disease does accompany H-LD, in some cases it may be necessary to institute management for the allergy in order for the salicylate-free diet to be effective.

The ability to "turn on" and "turn off" the pattern of hyperactivity, the discontinuance of management, and the accomplishment of improvement in scholastic achievement is strong evidence to support the relationship between H-LD and the occurrence of artificial flavors and colors. In most cases a review of the diet diary reveals a larger than usual incidence of artificial flavor and artificial color. In view of these observations the question is raised, "Is it possible to attribute the improvement in the school age child to the increased consumption of these chemicals in our foodstu?"

Then, having a conscientious and concerned mother, the child gets vitamins, usually chewable, which are loaded with additives. To cap the ironical situation, the child is given a dose of either Ritalin or amphetamines, and he is on top of the same ritual is continued at lunch, with hot dogs, luncheon meats, ice cream and various beverages. Is it any wonder that our children are hyperactive and fail in school?

Except for terminology, there is no difference between artificial colors, flavors and food additives. They are all the same, different names for the same thing. Recognizing this relationship, we can draw upon the observations on adverse drug reactions in clinical medicine, and particularly in the field of pharmacogenetics for an interpretation of the mechanism that may be involved in H-LD induced by artificial colors and flavors.

Studies in the field of genetics over the past few decades have demonstrated that each person has a unique "biological individuality" that determines a "pharmacological profile". The cardinal symptoms of drugs depend to a great degree upon proteins that have a high degree of specificity. The structure and the quality of these proteins can be altered through genetic mutations which influence drug metabolism, their binding abilities and drug receptor interactions in the body. As this information becomes available, a time may come when the individual manifests no disturbances. However, in the presence of certain drugs they express their potential dangerous characteristics. For example: The abnormal hemoglobin Zurich
which is characterized by the replacement of a histidine residue by arginine at the 53-
position of the amino acid sequence of the beta chain of hemoglobin. (16)
4. Psychologically sensitive to oxidative denaturation but not to the point
where this occurs spontaneously at an ap-
proximately normal rate. This difference, heterozygotes show no unusual symptoms
aside from a slightly shortened life span of the organism. It is believed that
patients are given sulfonamides or other oxid-
ant drugs, methemoglobinemia develops. The hemoglobin damages and precipitates which are manifested here as anemia.
Similar adverse effects have been ob-
served with some other abnormal hemoglo-
bins.
Another example is the inheritance of the enzyme glucose-6-phosphate dehydro-
genase (G-6-PD), a condition thought to affect some tens of millions of people. (16)
Here again the pathology is essentially drug
dependent, and hemolysis results from a
number of compounds, e.g., the anti-malarial primaquine, para-amino-sulfonanil acid, phen-
acetin, the sulfonamides and also certain
constituents of the broad bean. It is
interesting to note that the gene carrying the
determining characteristic for this en-
zyme is on chromosome 16-17 of the auto-
some.
This explains the greater frequency of
the enzyme deficiency and drug sensitivity among males of all races. It is highly significant
that in H-LD the X-chromosome may be
involved, which could explain the overwhelm-
ing predominance among boys, as well as the
occurrence in only one boy in a family.
A still further example of the,
interaction of variability of drug metabol-
isms is that observed with isoniazid (INH)
which is currently in common use for the
treatment of tuberculosis. (17) Very early
in the use of INH clinically observed varia-
tions in the metabolism of the drug, whether measured by the decrease in serum level of
INH or by the rate of urinary excretion in
the form of acetyl INH. The problem was
resolved following the demonstration that
the general population is divided into
two genetic groups, namely, "slow 
Inactivators" and "rapid inactivators," INH inactivation is controlled by two
alleles at a single locus, the "slow
inactivator" allele (r) is dominant to the
"rapid inactivator" allele (R) which
indicates slow metabolism. In the
absence of slow inactivators, INH is a
toxic drug that can cause serious side
effects. This distinction is important
because it affects the choice of
medications for treating tuberculosis.

<table>
<thead>
<tr>
<th>TABLE VIII — GENETICS OF ISoniaZID (INH)</th>
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<tbody>
<tr>
<td>R (rapid inactivation)</td>
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<tr>
<td>Homozygous (RR)</td>
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<tr>
<td>Heterozygous (Rr)</td>
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<td>Heterozygous (Rr)</td>
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<td>Homozygous (rr)</td>
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50 percent Homozygous (RR) = Rapid inactivation.
50 percent Heterozygous (Rr) = Slow inactivation. (Inactive)

It is also interesting to note that slow
inactivators (rr) are also more likely to show
side effects from two drugs chemically related
to INH—the antipreservative phenazine,
a mono-amino oxidase inhibitor, and the
antibiotic, ampicillin.

This observation raises another important
topic relating to H-LD and the artificial
colors and flavors. In one instance, the possibility of
cross-reactivity among each group of chemicals,
resulting in more than one color or more than one odor to be at fault in the
same individual. This is supported by the realization that the colors are derived from
four basic structural groups related, while the
flavors are derived from four basic aromatic
bases. In addition, the artificial colors and
flavors also show a close structural relation-
ship. Accordingly, the broad exclusion
provision in the color additive law is necessary for
successful management.

The Lesch-Nyan syndrome, which has been determined to be X-linked recessive,
may also serve as a guide to studying the possible
interaction with H-LD as related to artificial
colors and flavors. In this syndrome, children are
affected by the defect which involves a deficiency of the enzyme
hypoxanthine guanine phosphoribosyltrans-
mutase. (18) This is a reproductive condi-
tion that occurs exclusively in males. The
importance of the Lesch-Nyan syndrome as a
guide in studying H-LD is twofold:
(1) The Lesch-Nyan syndrome is an X-
chromosome with the exclusive implication of males.
(2) This is the first disease in which an
inherited neurochemical vulnerability can be associated with a specific aberrant pattern of
behavior, namely, compulsive and aggress-
ion.
Although environmental influences have not
been demonstrated for Lesch-Nyan dis-
ease, nevertheless, it is conceivable that other
X-chromosomes may have polygenic alterations may be responsible for environmentally induced behavior patterns, e.g., the artificial colors and flavors in H-LD.
In addition to metabolic disturbances and
electrolyte variations, anomalies of the re-
ceptor apparatus of the CNS may exhibit either increased or decreased sensitivity
to as is observed in commutin tolerance and
vaginal atrophy.
It is also possible that the involvement of
children with either normal or high IQs may be on a genetic basis. Educators and child psychologists generally recognize that in the early years and through the preschool years, girls exceed boys in learning
achievement. By the beginning of school, however, there are no longer consistent differ-
tences. It is also at school age that the pattern of males in most
children.
This could also be an expression of
the pharmacological activity of the artifi-
cial color (ultramarine blue) having a represen-
tative action upon normal physiological functions.
On the basis of the observations in phar-
macogenetics, it is conceivable that H-LD is an expression of the pharmacological activity of artificial colors and flavors in individuals with genetic variation. It is possible that the adverse reaction in these chemicals exerts a reprerssor effect which prevents the normal expression of these children. A repressor ef-
fect could explain not only the rapid, dras-
matic improvement in the clinical pattern
which follows elimination of the chemicals,
but also the sudden symptoms within hours, following ingestion of the
additives.
In addition, the rapid improvement ob-
erved both in the behavioral pattern and
scholastic achievement would indicate that
food chemicals induce a functional derange-
dent due to the pharmacological activity
rather than persistent organic changes. On
the other hand, this position cannot be
assumed for the children who fail to respond favorably. It is possible that children who
fail to respond experience irreversible dam-
ages induced by the chemicals? This raises
another aspect of the problem for consider-
ation. What is the role of food additives
during pregnancy and lactation?
Investigators in the field of fetal develop-
ment and pharmacology suspect that drugs
during pregnancy may induce subtle effect
upon the child which may be manifested
eral as behavioral disturbances. Food
additives, like drugs, are low molecular chem-
icals which also have the capacity to cross
the placental barrier and may have similar adverse effects upon the child following in-
genation during pregnancy.
The control of hyperkinesis with subse-
quently improvement in scholastic achieve-
meltment in children following man-
agement with the salicylate-free diet. The
precise identification of the specific factors
among the various uses of food additives has not been determined. The nature of the

1. Chemicals Used in Food Processing, Food Protection Committee, Food and Nutrition
Board, National Academy of Sciences-National Research Council, publication 1274,
4. (a) Clinical and Biological Hazards in Food, International Symposium on Food
4. (b) Research for the World Food Crisis, A symposium presented at the meeting of
PARAGUAYAN INDIAN HUNT

Mr. ABOUREZK. Mr. President, in an article on page 5 of the Temple University in a recent issue of Nation, we see only another pitiful example of the barbarism and inhumanity which exists in countries whose governments are our friends.

The Paraguayan regime of Gen. Alfredo Stroesser is bent on a systematic liquidation of the Ache Indian nation. Achés are being hunted and indiscriminately killed regardless of age, sex, or position. Those willing to accept slavery may be kept alive as work hands without medical attention. The use of their language is discouraged and traditional music is prohibited.

The Paraguayan National Police Force has interfered hundreds of political prisoners and continued to storeach-turning torture as merely their standard operating procedure. Mr. Arens reports that even ranking members of the Paraguayan police, rarely engaged in the dreaded torture sessions as a matter of course.

Mr. President, this year we are giving the Stroesser regime over $115 million in military and economic aid. Furthermore, we have long been involved in the training of Paraguayan military, paramilitary and police forces. This year alone we will give Stroesser and his repressive regime $2.5 million in military assistance, training and advice. Nothing could be more of an incentive to such an inhuman government than a continuing flow of aid.

Perhaps one reason why our aid continues to flow abundantly to this government is the close relationship which exists between the General Stroesser and both our U.S. Ambassador to Paraguay, Professor Arens reports that General Stroesser once told American reporters that he regarded the U.S. Ambassador as a member of his cabinet.

Mr. President, I am shocked and appalled at the findings of Professor Arens. For the United States to support a government bent on the genocide of its people certainly makes the United States an "accessory to the crime."

I ask unanimous consent that this article be printed in the Record.

There being no objection, the article was ordered to be printed in the Record, as follows:

PARAGUAYAN INDIAN HUNT
(By Richard Arenal)

On June 4, 1975, the University of Bern released an open letter to the President of Paraguay charging him with the forced and carefully organized massacre of Ache Indians (otherwise known as Guayaki, of Tupi linguistic stock), added to the detention of Ache Indians in "observation" indistinguishable from Nazi concentration camps and calculated to insure physical and psychological control and submission by Ache, Igenet proporions and had been carried on with the apparent approval and indeed was made for Achê who submitted to being tamed and trained as kilometers of their own kind. Their reward is a diet of mush and slapping during survival and the assignment of captured Ache women as "wives." Both the Achê killers and their victims may be guaranteed survival through good behavior. Those willing to accept undeterred slavery may also be kept alive for indefinite periods as long as they continue to work as fuel and without medical attention. The use of their language is discouraged; their traditional music is prohibited. They are given death rates from diseases of malnutrition and sheer lack of will to survive in this primitive environment.

This inevitable attrition is accelerated by such acts as reported by a team of anthropologists—that "about one-half...[of the population]...was captured between 1967 and 1972 and 15 percent of the Achê was captured by the Achês in each year. What is felt by the survivors is pervasive melancholy and a sense of loss. They are convinced that the state will not adequately represent their interests in meetings with the government." The Ache "regards himself as no longer an Achê and not even a human being...[and] as half-dreaded." Yes another group permitted to survive may be children, largely girls (ranging from 10 years upward). Those are being sold as slaves, principally for sexual purpose. And as if in a nightmare we read of yet another "weeping song" taped by anthropologists in March of 1975 in which the "perhaps 30-year-old Achê woman Kachechi complains that she does not know if her husband, who is now living in the houses of "mysterious Paraguayans." The price of an Achê girl, quoted by a German anthropologist, who was responsible for the tape recording during the immediate collection of the open letter of the University of Bern, is in the neighborhood of 85.

For the Axé to return to a social position as if it were a real person, a real soul, a real life is not unreasonable. This is a man, not a case of a sexless, spiritless, Veal-like, vegetable creature, but a living, breathing, thinking, feeling human being with a soul and a heart and a mind. It is not unreasonable that the United Nations and of Bern declared the immediate cessation of these crimes and the criminal prosecution of all those responsible, regardless of their station in life.