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The Age of Autism: Something Wicked -- 1

By Dan Olmsted
UPI Senior Editor

The Combating Autism Act passed by the U.S. Senate earlier this month includes millions of dollars for research into possible environmental causes of autism.

It's about time.

Specifically, the bill authorizes \$45 million to the National Institute of Environmental Health Sciences to spend over five years in clinical research on possible environmental factors.

While that may sound like a good chunk of change, it's minuscule compared with spending on (so far) fruitless searches for an "autism gene."

In previous installments of this column, I've sketched the natural history of the disorder beginning with child psychiatrist Leo Kanner's landmark 1943 paper, "Autistic Disturbances of Affective Contact."

And I've suggested that from the very beginning, an environmental trigger -- something harmful coming from the outside in -- was alarmingly evident. As Macbeth put it, there's reason to worry that "Something wicked this way comes."

Kanner identified 11 children with what he called the "markedly and uniquely" different disorder of autism. The first child in his case series was born in 1931, the last in 1938. While Kanner focused on the parents' high educational attainment, we proposed a different way of connecting the dots:

-- Case 1, Donald T., grew up in Forest, Miss., which is smack in the middle of national forest land that was being replanted by the Civilian Conservation Corps during the early 1930s.

-- Case 2, Frederick W., was the son of a plant pathologist.

-- Case 3, Richard M., was the son of a forestry professor at a southern university.

What might unite those cases? Mark Blaxill of the advocacy group SafeMinds suggested agricultural chemicals, in particular ethyl-mercury-based fungicides that came on the market about 1930. They were patented by Morris Kharasch, the "father of organic chemistry," who also invented thimerosal, the ethyl-mercury-based vaccine preservative some blame for the huge rise in autism diagnoses.

Whether you subscribe to the thimerosal theory or not, any environmental link is a worrisome prospect. And evidence for such a link has expanded over the years.

Recently I had a fascinating conversation with Thomas Felicetti of Beechwood Rehabilitation Services of Langhorne, Pa. I came across work he had done more than a quarter-century ago that strongly suggested a "chemical connection" in autism.

He summarized that work in the journal *Milieu Therapy* in 1981, and it is riveting to read in light of everything that has come after -- namely, hundreds of thousands more cases of autism. Felicetti set up a study at the Avalon School in Massachusetts where he was teaching at the time.

"The experimental design was rather simple and straightforward," he recounted in the paper -- comparing the occupations of 20 parents of autistic children, 20 parents of retarded children and 20 parents of "normal" children who were friends and neighbors of those attending the school.

"The results did, in fact, suggest a chemical connection," he wrote. "Eight of the 37 known parents of the autistic children had sustained occupational exposure to chemicals prior to conception. Five were chemists and three worked in related fields. The exposed parents represent 21 percent of the autistic group. This compared to 2.7 percent of the retardation controls and 10 percent of the normal controls. The data, subjected to statistical analysis, demonstrated a chemical connection.

"The results of this study point in the direction of chemical exposure as an etiological factor in the birth of autistic children."

Felicetti is quick to acknowledge that such a small study was not definitive. "This particular study was occupations, and it was all different occupations," he told me. "There were chemists, there were chemical assistants who would suck chemicals through pipettes in those days. There were roof tarrers who were exposed to chemicals through the roof tar. A variety of occupations.

"But again that's as far as I went with it. It was a pretty good study but suggestive -- because we couldn't find any particular chemical and because we only looked at occupations."

But it's worth coming to a full stop at his simple and straightforward conclusion that a "chemical connection" was evident in the etiology of autism. Plus, he was building on earlier work that already suggested such a connection (more on that in an upcoming column). And further disturbing studies have followed.

It's also significant that the study tried to roughly control for "occupational status" -- "It did try to have the control groups of equal occupation and social class," Felicetti said. Contrary to all the speculation that brainpower and education correlate with autistic offspring, job status had nothing to do with it -- roof tarrers are not perched atop the economic ladder, so to speak.

The key was the job itself and its exposure to chemicals. Felicetti told me the plant pathologist and forestry professor from Leo Kanner's 1943 case studies also would have met his test for occupations with chemical exposure.

So yes, maybe Kanner's kids had especially bright parents -- but maybe they were up to their elbows in mercury fungicides, and Lord knows what else, before anyone knew how dangerous that was. (Perhaps fittingly, Kanner said the forestry professor was "very much immersed in his work.")


One of Felicetti's observations in the 1981 article is haunting: "It is especially ironic that many of the parents of the autistic youngsters in our study could not specify the nature of the chemical agents. One can only speculate that they had blind faith in the safety precautions of the plants and in the reassurances of their employers. ...

"We seem to be coming out of an era when individuals routinely assume that occupational exposure to a wide variety of chemicals is a safe pastime. However, ... research indicates this awakening may be too late

for substantial numbers of people and for many future generations."

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Next: A "startling" connection.

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