

## Medicine by John Grauerholz, M.D.

### 'Mad cow' disease fuels meat phobia

*Medical evidence indicates no danger to consumers from the new disease, which may derive from a "species jump."*

**T**he latest round in the ongoing campaign against meat eating opened with a flurry of publicity about "mad cow disease" which causes cows to stagger, fall, and even become violent, before they die of destruction of the brain. It has killed more than 14,000 cattle in Great Britain since it began in 1985. Several countries, including the United States and Russia, have banned imports of British beef.

The bans resulted from fears that people who ate contaminated meat might risk catching the disease, though there is no evidence for such a risk. A few European countries that temporarily banned import of British beef have lifted those bans.

The disease resembles a sheep disease called scrapie, believed to be caused by a "slow virus" similar to the one responsible for two rare human brain diseases, kuru and Creutzfeldt-Jakob disease. The infectious agent is called an "unconventional virus" and apparently lacks genetic material, unlike other viruses which contain either DNA or RNA. These "unconventional viruses," or Prions, grow extremely slowly and are difficult to isolate.

Kuru caused an outbreak of degenerative brain disease in Papua, New Guinea. In 1959, D. Carlton Gajdusek, of the National Institute of Neurological Disorders and Stroke, discovered that the disease spread among women and children who ceremonially ate the brains of dead relatives while preparing the bodies for burial.

Kuru, Creutzfeldt-Jakob disease,

and scrapie cause slowly progressive degeneration of the brain. At death, the brain shows multiple small holes, giving it the appearance of a sponge. This appearance led to the term spongiform encephalopathy as a description of the finding. The similar appearance of the brain and the long course of the disease suggest a relation between scrapie and bovine spongiform encephalopathy (BSE), the technical name for "mad cattle disease."

The British believe the cattle got the disease from eating a protein supplement made from sheep "renderings"—the waste products left over from butchered sheep. The government banned the use of the feed in 1988, but it can take years for the disease to appear in cattle.

BSE intrigued Dr. John Seale of Great Britain, who has made a study of new infectious disease epidemics and is interested in the transfer of an infection from one species of animal to another, so-called "species jumps."

In the July-August 1989 issue of *21st Century Science & Technology*, Seale wrote that BSE "has appeared since 1985 on more than 1,000 farms scattered throughout Britain as an entirely new disease of cattle that has not been reported from other parts of the world. It is uniformly fatal and caused by an atypical virus similar to those that cause scrapie in sheep and kuru and Creutzfeldt-Jakob disease in humans. The epizootic has the characteristics of a cross-species transfer of a new, slow virus disease originating from a single source.

"It has been suggested that the out-

break may have been caused by feeding cattle with scrapie-contaminated bone meal prepared from the carcasses of sheep. This is similar to the suggestion that the spongiform encephalopathy of mink, which appeared 40 years ago, had its origins in the feeding of carcasses to mink on commercial mink farms. However 18,000 sheep in Britain were infected with the scrapie virus in 1935, when it accidentally contaminated a batch of louping ill vaccine, and most experimental cross-species transfers of these atypical viruses have been achieved only by inoculation. Precisely how this virus jumped from sheep to cattle is still not known, but clearly it is related to human actions."

Several epidemiologic studies in Europe found no relation between scrapie infections in sheep and human disease, despite the fact that sheep and goats, which also get scrapie, have been going to market for more than 200 years. There is also no correlation between scrapie and the incidence of Creutzfeldt-Jakob disease.

No cases of BSE have been diagnosed outside Britain as yet. But the National Renderers Association and the American Protein Producers Industry recommended in December 1989 that feed producers no longer use sheep products in cattle feed.

Commenting on the consequences of an outbreak of the disease in the U.S., an article in the June 26, 1990 *Washington Post* stated that "a large part of the cost would be consumer's fears that the beef was not safe. As [Gary] Cowan [of the National Cattlemen's Association] said: 'It would be a catastrophe economically. The real threat is consumer perception.' . . .

"In Britain, consumers rejected government pronouncements that the beef was safe, and more than 1,000 schools have dropped home-grown meat from their menus."