

Tracking the Epstein-Barr virus

Those unfortunates felled by infectious mononucleosis develop antibodies to the coat protein and other proteins of Epstein-Barr virus (EBV). This virus is generally regarded as the chief cause of this benign disease of the lymph glands, which commonly strikes adolescents. EBV is also incriminated in two other diseases: Burkitt's lymphoma and nasopharyngeal cancer. Burkitt's lymphoma is an uncommon cancer of lymphoid tissue that affects young children in various parts of Africa. Like infectious mononucleosis, it is a disease of the immune system, but it is malignant instead of benign. Nasopharyngeal cancer is a malignancy of epithelial cells, cells of different embryonic origin from those of the lymph system.

If indeed, Epstein-Barr virus is the cause of these three diseases, why is it benign in one and cancerous in the other two? Why is infectious mononucleosis common while the others are uncommon? How is it that one disease involves epithelial cells and the other two involve lymph cells?

Joseph S. Pagano and colleagues at The Cancer Research Center of the University of North Carolina in Chapel Hill have been trying to answer these questions by looking for the linchpin in the three diseases. He reported a "unifying hypothesis" of the pathogenesis of the diseases at a recent symposium on persistent viruses in Keystone, Colo.

Pagano suggested the following scenario. Epstein-Barr virus gets a foothold in the body by invading the epithelial cells of the middle part of the pharynx. This invasion may or may not produce symptoms. The genome of the virus then forms a circle and begins replicating. If the replication is unchecked, the infected epithelial cells eventually die and many copies of the virus escape into the body. However, if the replication is arrested at some point, several copies of the circular genome or episome of the virus become ensconced in the epithelial cell without killing it. Such an epithelial cell harboring the episomal form of EBV may be a potential progenitor of a cancerous nasopharyngeal cell.

Virus escaping from killed epithelial cells can infect a secondary target cell, the B lymphocyte, which has receptors on its surface for EBV. This is the type of cell involved in Burkitt's lymphoma and infectious mononucleosis. The genome of the virus forms an episome in this cell type also, but it cannot replicate.

Although the episome cannot replicate in the B lymphocyte, it does stimulate the cells to proliferate. Other types of cells in the immune system, T lymphocytes, detect the proliferating B lymphocytes, attack and kill them, producing the symptoms of mononucleosis. This controlled proliferation of the B lymphocytes is

rather common. In contrast, a cell, be it an epithelial cell of the pharynx or a B-lymphocyte, becomes cancerous only in the rare event that a certain part of the viral episome, a transforming sequence, becomes integrated into the genome of the host cell. After the transforming sequence infiltrates the host genome, it can direct the cell to become cancerous.

This scheme explains many basic common observations about the three diseases, but Pagano adds that many other environmental and genetic factors influence the onset and course of the diseases. □

Shrinks in court

The American Civil Liberties Union has taken a 220-page slap at the diagnostic competence of mental health professionals, particularly in the courtroom. In its new manual, "The Rights of Mental Patients," the ACLU contends that psychiatrists and psychologists "can be expected to agree only about 54 percent of the time, a rate of agreement only slightly better than the law of averages."

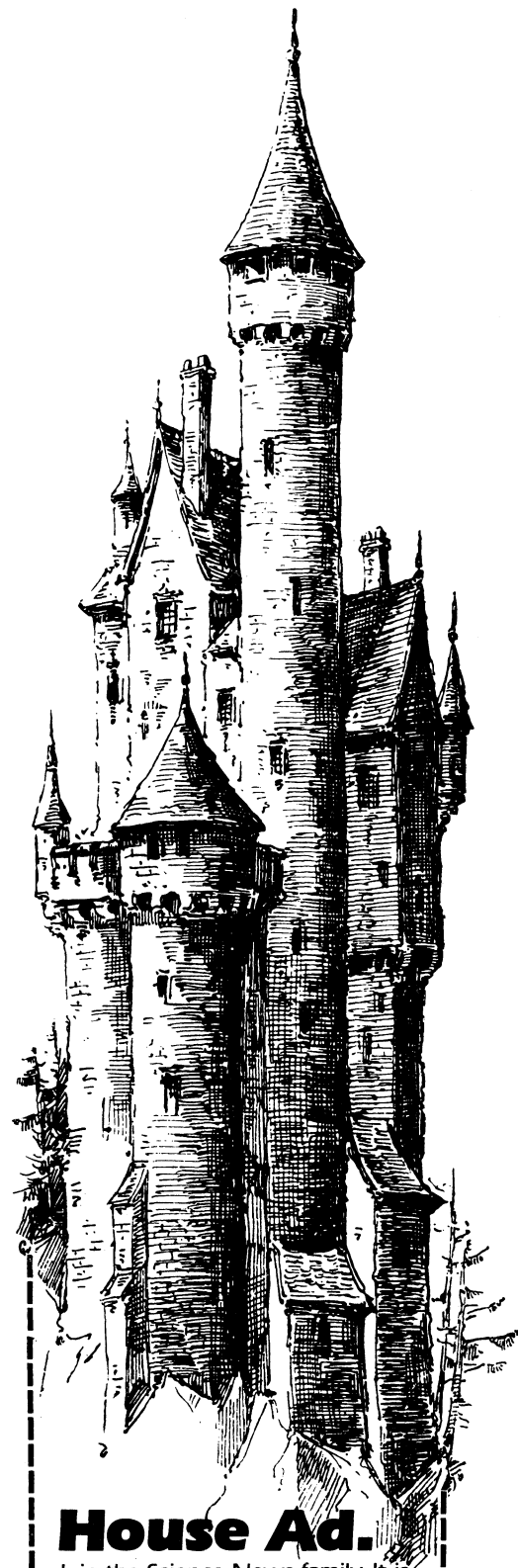
The booklet, written by long-time mental patients' rights advocate Bruce Ennis and staff counsel Richard Emery, questions whether the court should rely at all on the opinions of such professionals. The authors suggest that lie detectors may yield more accurate information. The authors go on to cite the relative inaccuracy of behavioral diagnoses in general (SN: 7/9/77, p. 28), and assert that professionals are likely to agree only about 40 percent of the time on whether a particular patient has a specific functional disorder, such as schizophrenia, paranoia, depression or passive-aggressive personality.

Ennis and Emery further state that "predictions of dangerous behavior are wrong about 95 percent of the time." The handbook is published by Avon Press. □

Energy policy analysis

Since in major policy areas government policy has contributed to what is now called the energy crisis, future energy policy will most likely replay the past. So states Walter J. Mead, an economics professor at the University of California at Santa Barbara, in his analysis, *Energy and the Environment: Conflict In Public Policy*. It was issued last month by the American Enterprise Institute for Public Policy Research.

Mead found justifications for oil and gas price controls "faulty" and at least partly responsible for the growing balance of payments problem and gas shortages. He recommends that new energy subsidies and environmental protection measures be instituted only if there is prior demonstration that their benefits will exceed their costs. □



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