nals. By his count, the new company would own 424, or 34%, of 1240 mainstream biomedical journals tracked by the Institute for Scientific Information (ISI) in Philadelphia, Pennsylvania. Analysis by *Science* of other ISI data showed that the merger would also give Reed Elsevier 134 of the 500 most cited journals (see graphic).

If regulators do find an antitrust problem, Reed Elsevier may be forced to sell some journals, analysts say. But few of those contacted by *Science* believe that requirement would kill the deal—although European regulators did sink Reed Elsevier's last proposed megamerger, with Dutch giant Wolters Kluwer, in 1998. Any hint of trouble for this merger may not surface for months, however, as analysts predict the regulatory review could continue well into 2001. **–DAVID MALAKOFF**

U.K. MAD COW DISEASE

Report Flags Hazards Of Risk Assessment

LONDON—What happens when the premise underlying a scientific risk assessment is wrong and, as a result, the risk is vastly understated? In the case of so-called mad cow disease, or bovine spongiform encephalopathy (BSE), people die, an industry suffers, and a country panics.

Last week an independent panel issued its report (www.bse.org.uk) on how the British government has responded to a BSE outbreak over the past 15 years that has claimed 81 human lives and counting, led to the slaughter of 176,000 cattle, and cost the government $7.5 billion. The 16-volume report, written by a three-member panel chaired by senior appellate judge Lord Andrew Phillips, concluded that the practice of feeding cattle with the remains of dead cattle spread BSE "like a chain letter" through the British herd before anyone knew what was happening. It also describes how an incorrect assumption by a scientific panel of how BSE would behave played into a desire to assure the public that the health risks were negligible—with tragic consequences. "At the heart of the BSE story lies the question of how to handle hazard—a known hazard to cattle and an unknown hazard to humans," it says.

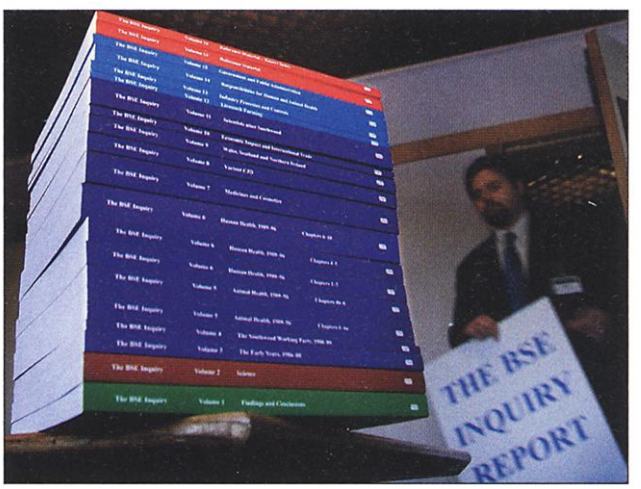
The panel rejects the original assumption that BSE derived from scrapie, a 200-year-old disease in sheep that is not transmitted to humans, and embraces the current view that BSE and its human variation, called variant Creutzfeldt-Jakob disease (vCJD), may have emerged in the 1970s from a genetic mutation that went unnoticed in a single cow. Although the report concludes that the crisis was unavoidable, it says that the epidemic could have been curbed with the swifter introduction of regulations intended to keep infected meat out of the human food chain. Phillips says a research "supremo" might also have helped to spot gaps in the scientific effort, including proposing "experiments to test the scrapie hypothesis origin."

Reactions to the report have been generally favorable. "By and large, the report's grasp of events and what drove people is about right," says Chris Bostock of the government's Spongiform Encephalopathy Advisory Committee, which will review the report. But some scientists worry that the government may be getting off too lightly. The report "looks exceedingly useful, but it's not aggressive enough," says Stephen Dealler, a microbiologist at Leeds General Hospital. Dealler is one of several scientists denied access to a clinical collection of brains from slaughtered cows held by the Ministry of Agriculture, Food, and Fisheries (MAFF). The report states that there should be open access to such material for researchers. A MAFF spokesperson says that the ministry is preparing a response to the report.

The Phillips panel, convened in January 1998, was asked by the government to establish the history of the emergence and identification of BSE and vCJD until 20 March 1996—when the British government announced that BSE might be transmissible to humans. The panel was also charged with assessing the adequacy of the government's response, "taking into account the state of knowledge at the time." The report concludes that the government took the right measures, such as excluding those parts of the carcass from the human food chain thought most likely to pose a risk of spreading infection across species, but that decisions were "not always taken in a timely fashion." For example, animal-feed traders misinterpreted a 5-week grace period to clear existing stocks of infectious material as an indication that the risk was low and, therefore, continued to sell the stock after the ban went into effect.

Nor were the best people recruited to give advice in the early days. "There were a number of people not only in this country, but in Switzerland and the U.S., who could have been approached and weren't," says panel member Malcolm Ferguson-Smith, a professor of clinical genetics at Cambridge University.

The policies were also undermined by politicians, policy-makers, and scientists playing down the BSE threat to humans. One key element was a 1989 report on the potential BSE risk to humans by a committee headed by Richard Southwood, a professor of zoology at the University of Oxford, that was based on the assumption that BSE was likely to behave like scrapie and not infect humans. Although Southwood's report said that the consequences could be very serious if that assumption were wrong, that message was rarely repeated in public utterances. "Those at the 'coal face' were getting the message that there was little risk of BSE spreading to people," says Ferguson-Smith.



Paper trail. The BSE inquiry took 33 months and resulted in a 16-volume report, which was delivered last week.

"So they were thinking, 'What does it matter if we chuck a bit from the carcass into the wrong bin and it is processed into human food.' "

In many ways, the BSE-vCJD picture is as murky today as it was when the British government first struggled to come to grips with the nightmarish outbreak. It's still far from certain, for example, how many people may succumb to vCJD, or even why BSE infects humans in the first place. The panel's

CREDIT: J. EVANS/REUTERS/ARCHIVE PHOTOS

report also presents a cautionary tale to the rest of the world: "BSE could have arisen anywhere and spread wherever animal protein is recycled," says Ferguson-Smith. "Other countries should ponder our experience."

–HELEN GAVAGHAN

Helen Gavaghan writes from Hebden Bridge, West Yorkshire, U.K.

GENE SEQUENCING

China, Denmark Team Up to Tackle the Pig

BEIJING—China and Denmark have formed a consortium to sequence the pig genome. The project, expected to take several years, is the first to tackle livestock; when completed, it would be the fourth to tackle a mammalian genome, after the human, mouse, and rat. The partners hope that information from the project will benefit pig-breeding industries in both countries as well as basic science and medicine.

The project links the Danish Institute of Animal Sciences, the Royal Veterinary and Agricultural University (KVL), and representatives from Denmark's pig industry with the Beijing Genomics Institute (BGI) of the Chinese Academy of Sciences (CAS). Leaders of the four groups struck a deal on 20 October during a visit here by a Danish delegation. The partnership is a "perfect match" between China's powerful sequencing capacity and Denmark's expertise in pig breeding and experience in comparative and functional genomics research, says BGI Director Yang Huanming. "We came here with the intention of signing an agreement, and we are satisfied with the result," notes KVL pro-rector Torben Greve, who is head of the Danish Pig Genome Consortium.

The two sides have agreed to split the $15 million cost of the first phase of the project, a 3-year effort to identify valuable genes, develop markers for physical and genetic mapping, and provide research tools for xenotransplantation. A second phase, taking several more years and costing up to $60 million, would aim for a working draft covering 90% of the sequence and 95% of the genes. The pig genome is estimated to contain 3 billion base pairs.

BGI will do the sequencing and sequence analysis using a supercomputer and more than 100 of the latest capillary sequencing machines. BGI plans to redirect its current roster of 45 machines from work on the international human genome project to the pig project, says BGI deputy director Yu Jun. Denmark will be responsible for developing genetic markers for valuable traits such as disease resistance, growth, and litter size. Its scientists will also build about 100 libraries of cDNA clones containing partial gene sequences that will help the teams identify the full-length genes.

Each side has agreed to put up $2 million for the initial phase. CAS has already provided the Beijing institute with money. The Danish ministries of research and of food, agriculture, and fisheries are expected to fund work in Denmark, while the National Committee for Pig Production and the Danish Bacon and Meat Council support the BGI sequencing team.

Researchers had hoped to make the sequencing data available to the scientific community immediately, as has been the case under the so-called Bermuda rules used in the human genome project. But industry contributors asked for release to be delayed several months. "Both sides have agreed to create a balance between the Bermuda rules, which require immediate release within 24 hours, and the present data-release policies by other private sectors to protect commercial applications," says Yang.

Even so, the partners say that they remain committed to the concept of sharing. "This project is just like any other international collaboration project, and there will be no new restrictions," says Orla Gron Pederson of Denmark's national committee. The final terms of data release are still being hashed out, Yang says, along with provisions for scientific procedures, intellectual property rights, and future partners. Yang says that institutes in Singapore and France have expressed an interest in the project but so far lack funding.

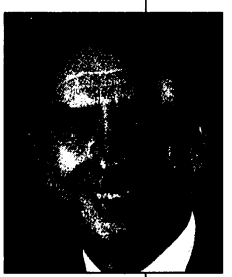
The project marks "an important step" for China toward sequencing the country's resource

CREDIT: (BOTTOM) CHINA FEATURES

Gene partners. Beijing's Wang Jian explains the genomics institute's capabilities to Danish delegation led by, at left, Torben Greve and Orla Gron Pedersen.

ScienceScope

Moving On? Apparently disgusted by this year's uglier than usual budget fight, Senator Arlen Specter (R–PA) (below), head of the appropriations subcommittee that oversees the budget of the National Institutes of Health (NIH), says he may move on to other leadership responsibilities. The hint, dropped in several press interviews last week, has alarmed biomedical research advocates, who count Specter among the handful of key lawmakers who have successfully pushed to double NIH's budget by 2003.



According to the *Washington Fax* newsletter, Specter said that "I don't expect to be on this subcommittee next year because of the futility of what we've done here." The comment came amid highly partisan political wrangling that has stalled approval of this year's NIH bill, which reportedly includes a 15% increase for the $17.9 billion agency.

Specter's departure would leave NIH spending panels in both the House and Senate leaderless, because Representative John Porter (R–IL), a major NIH booster, is retiring this year. Few of the potential replacements share either man's zeal for the cause, lobbyists say. But some caution against reading too much into Specter's comments, saying they could be designed to motivate supporters to lobby him to stay. Says one: It may be his " 'Tell me you love me' dance."

Reform Light More than 3 years after Claude Allègre, France's former research minister, launched his ill-fated campaign to radically overhaul the basic research agency CNRS, the French government has approved a scaled-down version of his reform package (*Science*, 31 March, p. 2387). The Council of Ministers approved a decree on 25 October giving the 26,000-researcher organization greater scientific autonomy, especially by removing government appointees from its scientific advisory council. On the other hand, the minister strengthened the powers of the CNRS executive board, which answers to the government and decides broad-based research strategy. And for the first time, foreign scientists will be asked to join the CNRS's external scientific evaluation committee.

Physicist Edouard Brézin, president of the executive board—whom Allègre had charged with carrying out the reform effort—announced that he will step down now that his work is done.