Imagine that: Animal magnetism exposed

PARIS, December 1785—Imagination and wonder, those bewitching sirens of superstition, received official condemnation with the release of an investigation of animal magnetism by a French Royal Academy of Sciences commission. Those who claim to use animal magnetism, also known as mesmerism, to elicit various physical cures and wild convulsions from their subjects actually exploit the awesome force of human imagination, the report concludes.

Commission members hope that their findings will help launch an era of sober, rational thinking led by philosophers, scientists, and other enlightened thinkers.

"Enthusiasts of mesmerism may be sincere, but the cures and convulsions that they produce actually spring from their subjects' fervid imaginations," remarked commission member and American inventor Benjamin Franklin in an interview conducted at a Parisian saloon. "Now excuse me, I must hasten outside and fly my kite in a raging thunderstorm to find out if a key hanging from its tail conducts electricity."

At the king's behest, the royal commission investigated miraculous medical cures and mental transformations attributed to German physician Anton Mesmer. He and his disciples claim to manipulate an invisible magnetic fluid in their subjects to unleash astonishing physical and mental powers.

Au contraire, responds the royal commission. Franklin and his band of enlightened men stoically sat through sessions conducted by accomplished mesmerists. Rather than convulsing violently, commission members remained calm and rational to the core.

The commission report concludes that mesmerism incites dramatic responses in three ways. Its practitioners make physical contact with their subjects, the subjects imitate reactions that they have seen in others undergoing mesmerism, or the subjects submit to the "terrible power" of their imaginations.

The fascination with animal magnetism has grown out of a long-standing interest in allegedly wondrous events and objects. Consider Gervase of Tilbury, an English noble who in 1210 published a description of 129 marvels of the known world. His catalog of the amazing included a magnetized stone, an herb that restored sight to blind sheep, werewolves roaming the countryside, and a water source that changed location whenever something dirty was put into it.

"I have it on good authority that all of my marvels are genuine," wrote Gervase in an unpublished diary, "but people may think of it only as *Gervase's Believe It or Not*."

Wonder exists as a craving for novel or unexpected events where the causes are unknown, Gervase explained.

Since then, religious and scholarly communities have often viewed marvels—presented in collections and public displays—as the exceptions that confirm the established order of nature. European voyages of discovery, which yielded a stream of surprising finds from foreign lands, raised wonder's intellectual status to new heights.

However, dissenting scholars argued during the Middle Ages that wonder has more in common with ignorance and fear than with intellectual discovery. The royal commission's report on animal magnetism sides with those foes of unbridled imagination.

"The mesmerists who murmured and gesticulated at me had no effect on my rational capacities, though the experience was rather relaxing," Franklin says. "I now feel compelled to crow like a rooster when I hear the word *spectacles*, but I'm sure that's just coincidence." —*B. Bower*

Astonishing power or terrible imagination?

Monk learns secrets of heredity from pea plants

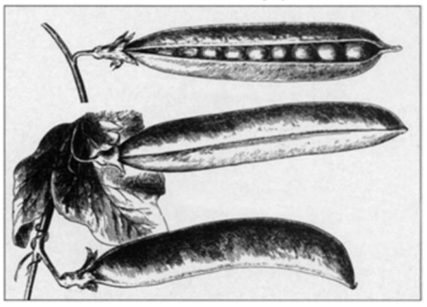
BRÜNN, Austria, March 1865—It may be the most interesting research on peas since noted Danish science writer Hans Christian Andersen reported that the legume causes insomnia among princesses. An Austrian monk has spent the past decade growing pea hybrids and religiously recording how certain physical traits—pod color, seed shape, and plant height, among others—pass from one generation to the next. He now claims to have found that a few simple rules govern the process.

Johann Gregor Mendel of St. Thomas Monastery, who described his results at this and last month's meetings of the Natural Sciences Society in Brünn, says that physical traits in other plants, as well as animals, may follow similar principles in their inheritance. "I am convinced that it will not be long before the whole world acknowledges the results of my work," he told SCIENCE NEWS.

In his experiments, Mendel examined more than 28,000 pea plants, noting seven traits that each come in two easily distinguishable forms. For example, pods of a pea plant are either green or yellow; their seeds, round or wrinkled; and their height, tall or dwarfed.

To create his hybrids, Mendel brushed the pollen of one pea plant onto the pistils of another. He started by crossbreeding strains that had already proved constant for one form of a trait with strains consistently showing the other form. For example, he crossed a tall strain with one whose stems were always short.

Surprisingly, in light of current hybridization theories, the resulting plants did not show blending of any of the seven physical traits. The crosses between tall and dwarf strains did not produce medium-size plants. Instead, they invariably resulted in tall plants. "Transitional forms were not observed in any experiment," Mendel says.



Pea plants reveal the rules.

The monk, who is also a meteorologist, dubs the form of each trait prevailing in the hybrids—green pods, round peas, long stems—"dominant" and the trait that disappears, "recessive." He speculates that through their eggs or pollen, the parents of a hybrid contribute to their offspring an element representing the dominant or recessive trait but not both. Therefore, when pollen and eggs join to form a seed, various combinations of the elements can result, but the presence of a dominant trait will always mask the recessive one.

In further experiments, Mendel allowed his hybrid pea plants to self-pollinate. He discovered that the recessive forms of each trait reappeared in a significant fraction of the offspring, demonstrating that the hybrid somehow continues to carry the recessive element in at least some of its seeds. In one experiment, notes Mendel, hybrids having green pods gave rise to 428 plants with green pods and 152 with yellow ones. Mendel documented similar ratios for all the traits he monitored. He concluded that among the offspring, when two hybrid plants are crossed, the dominant form of a trait generally outnumbers the recessive form 3 to 1.

Moreover, Mendel studied whether choice of one trait, say pod color, influences how often the form of a second trait, such as seed shape, passes from one generation to another. The data clearly indicate that each trait is inherited independently of the other ones, he contends.

Leading botanists contacted by SCIENCE NEWS were either unaware of Mendel's data or openly skeptical about his conclusions. The work on peas is intriguing but "incomplete," says German botanist Carl Wilhelm von Nägeli. To confirm its general applicability, von Nägeli argues, Mendel should conduct similar hybridization experiments with other plants, such as hawkweed. —*J. Travis*