Science vs astrology: New battle, old war

Disturbed by the apparent rising popularity of astrology among young people and the continued dissemination of astrological charts and advice through reputable newspapers, 186 scientists have opened another battle in their enduring fight with those who believe the stars influence events. Their statement (reproduced below in full) appears in the September/October issue of THE HUMANIST.

The statement was drafted by a past president of the American Astronomical Society, Bart J. Bok, who told SCIENCE NEWS he was disturbed by the increasing interest in astrology among his freshmen students at the University of Arizona. Such students, he says, are turning to astrology for guidance in uncertain times, "and we wanted to make clear to young people that this is not the way out."

Unlike many public utterances by large groups of distinguished scientists, the attack on astrology pulls no punches. The statement says the belief that the stars can be used to foretell the future has "no scientific foundation" and bluntly labels astrologers "charlatans." The list of signers, which includes 18 Nobel laureates, reads like a who's who of contemporary science—from astronomers Fred Hoyle and Fred L. Whipple and astrophysicists Hans A. Bethe and William A. Fowler to economist Paul Samuelson and psychologists B.F. Skinner and Konrad Lorenz.

While the formal statement, with its stellar collection of supporters, has gained the most publicity, the serious business of debunking the Age of Aquarius belongs to two accompanying HUMANIST articles. Bok himself presents the astronomical evidence against believing "subtle" forces exist between ourselves and distant cosmic objects, while engineer-writer Lawrence E. Jerome presents a revealing history of astrology, including criticism of recent claims and developments.

Bok writes that the basic rules of astrology go back to the work of Ptolemy—the second-century Greek astronomer whose works are respected as fundamental in the development of science, but who could not have known that constellations were accidental groupings connected only in the mind or that stars were unimaginably far away. Bok points out that modern astronomy has found no evidence of unexpected forces ("influences" or "vibrations" in astrologer's lingo) from distant stars, though some characteristics assigned to persons born under various signs may have their origin in the seasons.

Jerome attacks astrologers' claims that their "art" was developed over years of careful, empirical observation. On the contrary, he says, divination from the stars was only a simpleminded superposition of old magic on later observations that has remained unimproved since the Greeks. He cites statistical studies that show little correlation between astrological predictions and subsequent fact.

Reaction has been mixed. Astrologers understandably were upset, claiming they had been misunderstood. A Washington Star editorial called the statement "the most futile verbal broadside of recent memory," but concluded "we hope it made the scientists feel better." Bok says most of his mail has been favorable. Whether any minds have been changed remains to be seen: If astrology could survive persecution by the Medieval Church, it is likely to outlive another scholarly blast. □

Objections to Astrology

A Statement by 186 Leading Scientists

Scientists in a variety of fields have become concerned about the increased acceptance of astrology in many parts of the world. We, the undersigned—astronomers, astrophysicists, and scientists in other fields—wish to caution the public against the unquestioning acceptance of the predictions and advice given privately and publicly by astrologers. Those who wish to believe in astrology should realize that there is no scientific foundation for its tenets.

In ancient times people believed in the predictions and advice of astrologers because astrology was part and parcel of their magical world view. They looked upon celestial objects as abodes or omens of the Gods and, thus, intimately connected with events here on earth; they had no concept of the vast distances from the earth to the planets and stars. Now that these distances can and have been calculated, we can see how infinitesimally small are the gravitational and other effects produced by the distant planets and the far more distant stars. It is simply a mistake to imagine that the forces exerted by stars and planets at the moment of birth can in any way shape our futures. Neither is it true that the position of distant heavenly bodies make certain days or periods more favorable to particular kinds of action, or that the sign under which one was born determines one's compatibility or incompatibility with other people.

Why do people believe in astrology? In these uncertain times many long for the comfort of having guidance in making decisions. They would like to believe in a destiny predetermined by astral forces beyond their control. However, we must all face the world, and we must realize that our futures lie in ourselves, and not in the stars.

One would imagine, in this day of widespread enlightenment and education, that it would be unnecessary to debunk beliefs based on magic and superstition. Yet, acceptance of astrology pervades modern society. We are especially disturbed by the continued uncritical dissemination of astrological charts, forecasts, and horoscopes by the media and by otherwise reputable newspapers, magazines, and book publishers. This can only contribute to the growth of irrationalism and obscurantism. We believe that the time has come to challenge directly, and forcefully, the pretentious claims of astrological charlatans.

It should be apparent that those individuals who continue to have faith in astrology do so in spite of the fact that there is no verified scientific basis for their beliefs, and indeed that there is strong evidence to the contrary.

Statement signed by 186 prominent scientists warning the public about astrology: "No scientific foundation."

Protein research: Helping the hungry

Half of the world's people are protein-deficient. That fact has been—and is—the impetus for a lot of scientific research. Take, for example, two protein-boosting projects reported at the recent American Chemical Society meeting in Chicago. Neither project, the scientists admit, is terribly practical at this stage, but both share a common goal—to provide the world's hungry with more protein.

Biochemists Michiko Yamashita, Soichi Arai and Masao Fujimaki of the University of Tokyo report a technique for taking the foul taste out of protein from "alternative sources," such as soybeans, algae and leaves. The process is called the "plastein reaction," and converts crude, bad-tasting protein into tasteless, odorless "plastein."

The trick, Arai says, is to release the bitter impurities bound to crude protein by treating it with a series of enzymes and solvents. The remaining tasteless white powder (plastein) is "protein-like," Arai says, in that it contains a complete assortment of amino acids, but does not have the amino acid sequence or folded structure of a natural protein. Asked whether the process would be economically feasible, Arai was not sure. But, he said, people in starving nations often prefer "acceptibility of taste to protein content," and plastein would definitely pass the no-taste test.

David Sands and Lester Hankin of the Connecticut Agricultural Experiment Station in New Haven took a different approach to the protein problem. They report the screening and selection of fermenting bacteria that will excrete lysine (an essential amino acid that is missing in "incomplete proteins"). The lysine-excreting mutants, species of the genus *Lactobacillus*, can excrete 100 times more lysine than such bacteria normally produce. The team found that the lysine content in fermented soybean milk and silage could be increased 32 percent by using the mutants during fermentation. □