that by other definitions would be regarded as unscientific. I would plead that philosophers, teachers, and other interpreters who construct and employ models of the scientific enterprise so construct them as to represent more adequately and explicitly the great diversities and nonuniformities of science, and many more of its actualities, than most of the conventional current ones do. If the public is to understand and appreciate—as well as intelligently support—science, it must have a more inclusively truthful picture of it than it now possesses. If, in planning for the future, we are to project for science a truly significant function in public affairs, we must base our thinking about how it should operate in the future upon a model that depicts as accurately and inclusively as possible how it does in fact operate now. So far as I am aware, such a model, or image, does not now exist. Our thinking has been dominated altogether too much by a stereotype that is thoroughly inadequate and misleading.

References and Notes

1. H. Dingle, *The Scientific Adventure* (Pitman, London, 1952), p. 4.
2. It is my impression that this term was first proposed by Herbert Feigl. At any rate it appears in his essay "The scientific outlook: naturalism and humanism," *Am. Quart.* 1 (1949). See also Feigl and Brodbeck, *Readings in the Philosophy of Science* (Appleton-Century-Crofts, New York, 1953), p. 11.
3. B. Barber, *Science and the Social Order* (Free Press, Glencoe, Ill., 1952); H. Butterfield, *The Origins of Modern Science* (Anderson, London, 1951).
4. See the following papers and their references: P. G. Frank, *Sci. Monthly* 79, 139 (1954); B. Moore, Jr., *ibid.* 79, 146 (1954); A. A. Koyré, *ibid.* 80, 107 (1955); R. S. Cohen, *ibid.* 80, 111 (1955).

Tatuo Aida, Geneticist

Tatuo Aida, Japanese geneticist well known for his studies on the fresh-water fish *Oryzias* (*Aplocheilus*) *latipes,* died on 16 December 1957 at the age of 86. He was born in Kyoto on 21 November 1871, the only son of Masatoyo and Moto Aida, and was educated in the Third State Junior College in Kyoto and later in the Tokyo Imperial University, where he majored in zoology and graduated in 1896. His main interest at that time was in the pelagic invertebrates of the groups Chaetognatha and Appendicularidae. His Japanese and English papers on the former group, published in 1897, dealt with 12 species, of which four were new, and his English paper on the latter group, published in 1907, included 12 species of which four were reported as new. These papers were the first reports of these groups from the Pacific waters.

After his two postgraduate years in the university, he was appointed professor of biology in the Fifth State Junior College in Kumamoto. In 1904 he was called back to Kyoto by the death of his father and remained there until the end of his life. He taught biology in the Kyoto Higher Technical School as well as in a Buddhist school in the same city.

About 1913 he became interested in the genetic studies of *Oryzias,* varieties of which are commonly kept in Japanese homes, and he kept on breeding this fish experimentally in his home in the city of Kyoto. His garden was traversed by small meandering canals which provided clean water for his nursery. He used concrete tanks and earthenware basins for the pedigree cultures. His time, during the breeding season of the fish, was devoted almost entirely to the experiments.

The results of these seven years of painstaking work were embodied in his first paper, published in 1921 in *Genetics.* The most important finding described in that paper was the presence of a gene for red color, carried in the Y-chromosome, and its occasional transfer into the X-chromosome by crossing-over. This discovery was antagonistic to the then-accepted knowledge of the structure of the Y-chromosome, especially with respect to *Drosophila,* and Aida hesitated considerably to publish it. The discovery was sustained by the result of Schmidt's work on another variable freshwater fish, *Lebistes,* conducted in Denmark and published almost coincidentally with Aida's paper. Aida's finding, as was rightly pointed out by the editor of *Genetics,* E. G. Conklin, went beyond Schmidt's in having demonstrated crossing-over between the Y- and the X-chromosomes.

Aida kept on with experimental breeding of the same fish after the appearance of this classic paper and published two more papers in the same field. The second paper, in 1930, dealt with the findings on the frequency of crossing-over between X and Y and the apparent nondisjunction of the X-chromosome. In 1932 he was awarded the Japan Academy Prize for the excellence of his genetic studies on this fish.

The third paper, published in 1936, was on sex-reversal, which is relatively common in this fish. These two papers, as well as the first one, were the outcome of his laborious, long-continued experiments. His interest in the experiments never waned, even on his deathbed, and whenever he felt better, he got up to perform some experiments. Thus, he left rather extensive breeding results unpublished, and we are hoping that someone will examine his notebooks and publish his further discoveries in an appropriate form.

Aida had a robust physique and enjoyed good health until he contracted, in his 80th year, a fatal asthma. He had the well-controlled temperament of a samurai, and, in spite of his apparent shyness, he was a man of great versatility. For many years, as a consultant to the Shimazu Factory in Kyoto, he practically directed extensive business works in its department of natural history, manufacturing and selling specimens, models, and instruments to schools all over Japan, as well as in China, Korea, and elsewhere. He was interested, as much as in the breeding experiments with fish, in old Japanese swords; he had a great deal of experience in judging the quality, and determining the maker, of such swords and became an authority in this line. He was also a good archer and was ranked among the few champions who were able to shoot a target through the Thirty-three-ken (Sixty-yard) Corridor, in the traditional tournament among the best archers in Japan.

Tatuo Aida disliked publicity, so much so that he never took any doctoral degree, and his death, announced to his friends only some days after the private funeral, was not reported even in the local papers. We have lost in him a geneticist of outstanding ability and originality.

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