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Part B. Intelligence, Personality, and Development

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and Walter E. Nance

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Part B

Intelligence, Personality, and Development

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Preface

The Third International Congress on Twin Studies, held in Jerusalem in June 1980, was a successful event because of its site and because of the number and quality of contributors, as reflected in these proceedings. But its relevance and success were perhaps also partly due to its taking place at a particular stage in the evolution of human biological sciences. The latter, and medicine among them, can no longer do without the lead offered them by genetics, since the study of the individual needs to be approached within the context of the generational tissue. Without genetics, it is impossible to understand what takes place in the phenotype, or to forecast what will occur in the offspring.

The boom in genetics can be compared to that of nuclear physics. In fact, the study of nonliving matter requires the understanding of nuclear forces, just as the study of living matter requires that of gene forces. The energy of the gene is the force behind any gene information, and the interweaving of the primary gene products is the loom on which the generational tissue is produced, from which life and its variability depend. Our understanding of these processes, as deep as it may be, is still comparable to what one gathers looking through a keyhole. The study of twins, with its many modern refinements, can frequently offer a broader understanding of the genetic times and processes involved in the human design, both at the physical and the psychological level.

Any research into human biology can draw water from this well, as is made clear by the variety of the contributions to these proceedings, and of those already published in the 30 years of life of the journal I established in 1952, *Acta Geneticae Medicae et Gemellologiae* (the proceedings of the First International Congress on Twin Studies, held in Rome in 1974, were published in Volume 25 of this journal in 1976), as well as by the increasing membership and impact of the International Society for Twin Studies. This has been largely the result of a truly collaborative effort, to which many have contributed, from many countries and various areas of interest. They cannot all be mentioned but I should like to at least acknowledge the efforts of Gordon Allen, organizer of the Second International Congress on Twin Studies held in Washington in 1977 (the proceedings of which were published by Alan R. Liss, Inc. in 1978 in three volumes entitled *Twin Research*, edited by Walter Nance with coeditors Gordon Allen and Paolo Parisi), and Ian MacGillivray, organizer of the Aberdeen Workshop in 1979, respectively Past President and President of our International Society, as well as those of Walter Nance and Paolo Parisi, the coeditors of these proceedings.

Luigi Gedda

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The Human Twin

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For the geneticist, or for anyone else, to make a speech in Jerusalem means a cultural effort that is extraordinary. Like every other researcher, the geneticist must locate his scientific investigations in the context of a truth that embraces nature and the history of man. Those of us who are concerned with twin studies, however, cannot simply leave our concrete and specific field to deal with theoretical themes; rather we must extract from our research those concepts that bridge the gap between the particular truths we seek and that total truth man desires in order to resolve the mystery that surrounds his existence.

I would like to submit to the distinguished personalities who are honoring our Congress with their presence, as well as to my very dear colleagues, the idea that the best project for creating a link between our field of interest and the other interests of modern culture would be to survey the state of our knowledge about the personality of the human twin.

Therefore, I will not talk about the application of the method of twin studies, but about the identical twin, the MZ twin individual. That is, I will not talk about those dizygotic twins like Esau and Jacob, who were different. These dizygotic twins are, of course, real twins, and about twice as frequent as the monozygotic twins. But I will refer only to the twin who has another twin identical to himself, and who represents the classical model of the phenomenon of twins.

The person who derives from the same egg as another person, an egg that has been fertilized by the same spermatozoon, is first of all a very singular being from the phylogenetic point of view. This is because, in the classification of living things, the son of man is almost always unique.

From the statistical point of view, this exception occurs in about 3.5 births out of every thousand and is of clear genetical origin. That is to say, we are dealing here with a hereditary phenomenon that often is repeated in the families where it is present.

The human twin is thus a rarity of the human species in the sense that its conception is not immediate in the same way that the conception of a nontwin is. The twin is not conceived at once, when the spermatozoon fertilizes the egg, but after a brief intervening time, when the product of fertilization divides into two embryonic, totipotential groups of cells. Thus, the conception of the monozygotic twin takes place in two stages, whereas the conception of other persons occurs in a single stage.