twinning is regarded as a happy event. In this case the worship of twins entrusts them, namely, with power over water allowing to confer fertility to the soil and also to women and animals.
In the past, the mother of twins was often executed with her offspring, or simply banished. In many tribes she is still compelled to go through elaborate purification in order to forestall the evil omen. If twins are welcomed their parents are similarly respected, as they symbolize the fertility power of the clan.

Superstitions and myths pertaining to twinning are universal and often present converging features among cultures without mutual contact. This would indicate the twin cult as one of the earliest religious beliefs of mankind.

Dr. F. Leroy, Hôpital Universitaire Saint-Pierre, Rue Haute 322, 1000 Bruxelles, Belgium

2. The Demography of the Twinning Phenomenon

IS WEINBERG’S METHOD VALID?

M. G. BULMER
Department of Biostatistics, University of Oxford, England

Suppose that L like-sexed and U unlike-sexed twins have been observed. Weinberg’s method estimates the numbers of dizygotic and monozygotic twins as DZ = 2U and MZ = L-U. This method is based on the assumptions that (1) the sex ratio in DZ twins is \( \frac{1}{2} \) and (2) the sexes of DZ twins are determined independently and with the same probability in all parents; in consequence there should, on average, be equal numbers of like-sexed and unlike-sexed DZ twins.

The first assumption is not exactly true, but the necessary correction is negligible. Departures from the second assumption would probably lead to an excess of like-sexed over unlike-sexed DZ twins; in consequence, Weinberg’s method would underestimate the numbers of DZ twins and overestimate the numbers of MZ twins. The literature on the frequencies of like-sexed and unlike-sexed pairs among twins known to be DZ through other genetic markers is reviewed. It is concluded that there is no evidence of an excess of like-sexed twins among them, and that there is therefore no reason to doubt the validity of Weinberg’s method. The extension of Weinberg’s method to estimate the zygosity types of triplets and quadruplets is described; it is shown that the resulting estimates agree well with the results of direct zygosity determination by blood grouping.

Prof. M. G. Bulmer, Department of Biostatistics, University of Oxford, England

RETROSPECTIVE STUDIES OF THE TWINNING RATE IN SCANDINAVIA

ALDUR W. ERIKSSON
Department of Human Genetics, Free University of Amsterdam, The Netherlands

The human twinning was studied in Sweden and Finland since the 1650s. The material comprises continuous series of data of single and multiple maternities compiled from the parish records and from various other, partly unpublished, sources in the archives of statistics.

Until recent times the twinning rate in these countries, and particularly on the Åland Islands, has been one of the highest known among Whites. Highly significant temporal fluctuations in the rates of multiple maternities were noted. There was a secular decline in the DZ twinning, particularly during the last generation. In Sweden the twinning rate during the last part of the eighteenth century was almost twice as high as it was in 1966-70. The triplet and quadruplet rates were about three to four times as high as they are today.

The extent to which the frequency of multiple maternities has depended on changes in maternal age, parity, marital status, and socio-economic conditions, was analysed. These environmental factors do not wholly explain the steep downward trend in the twinning rate. The marked decline in the twinning rates in Nordic populations about one generation after the break-up of isolates has been interpreted as evidence for the hypothesis that the degree of relationship between the parents of the mothers of twins...
(and not between the parents of the twins)
is important for the manifestation of DZ
twinning.

Prof. Aldur W. Eriksson, Department of Human
Genetics, van der Boechorststraat 7, Amsterdam,
The Netherlands

TWINNING FREQUENCIES
IN BADEN-WÜRTTEMBERG
ACCORDING TO PARENTAL AGE
AND BIRTH ORDER
Comparison between 1955-59
and 1968-72

PETER PROPPING, JENS KRÜGER
Department of Human Genetics, University of Heidelberg,
German Federal Republic

Since the middle of the fifties, the frequency
of twinning in the German Federal Repub­
lic is declining. In 1950 every 83rd con­
finement had resulted in a twin birth, where­
as in 1970 a twinning rate of 1 : 102 could
be observed. This is mainly due to a de­
cline of the DZ twinning rate, calculated
by Weinberg's differential method. Unfor­
tunately, the official statistical publications
of Germany only give the absolute figures
of the three types of twins without classi­
fying by maternal age.
We had the chance to get the original data
of all twin births of Baden-Württemberg
(Southwest Germany, 9 million inhabitants)
from 1955 to 1972. At the moment, the
analysis of these data is still going on; the
comparison of two 5-year-periods (1955-59
and 1968-72) shows the following results:

1. Obviously, the decline of the DZ twin­
ning rate cannot be explained by a mater­
nal age effect; in all maternal age groups
DZ twinning is less frequent in 1968-72
than in 1955-59.

2. There seems to be no obvious change in
DZ twinning when the proportions of the
DZs in all twins are compared for the two
periods in the same parity classes.
Therefore the decline of DZ twinning rates
in the German Federal Republic must have
other reasons; possible explanations will be
discussed.

Dr. Peter Propping, Department of Human Ge­
genetics, im Neuenheimer Feld 328, D-69 Heidelberg,
German Federal Republic

VARIATIONS OF TWINNING
FREQUENCIES IN ITALY IN THE
PAST TWENTY YEARS

M.T. ADAMOLI-LUN, L. CIACCI, E. CONTI
The Gregor Mendel Institute of Medical Genetics and
Twin Research, Rome, Italy

In the past years, in Italy as well as in
other countries, the frequency of twin births
has undergone a remarkable reduction. At
the same time, the ratio at birth between
same-sexed and opposite-sexed twin pairs
has also been modified. That is to say,
according to the classic theories of twin stud­
ies, the ratio between MZ and DZ twin
births has been modified.
The interdependence between variation of
frequency of twin births and variation of
the MZ : DZ ratio has been analysed, the
reduction in time of the number of children
born to mothers in advanced fertile age
being considered as the possible origin of
the reduction of twinning and of DZ twin­
ning.
The reduced number of children born to
mothers aged over 35 appears to only partly
account for the observed variability. So­
cioeconomic conditions in the different re­
gions of Italy are then taken into account,
and, finally, the genetic structure of the
various populations, as given by consanguin­
ality, is considered.

Dott.ssa M.T. Adamoli-Lun, Istituto Mendel, Piazza
Galeno 5, 00161 Roma, Italy